MODULE 7

THREE

MATHEMATICS

DATA AND CHANCE

Alberta
LEARNING

Learning
Technologies
Branch

GRADE THREE MATHEMATICS: MODULE 7
DATA AND CHANCE

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Grade Three Mathematics
Module 7: Data and Chance
Student Module Booklet
Learning Technologies Branch
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This document is intended for

Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

WELCOME
TO GRADE THREE MATHEMATICS
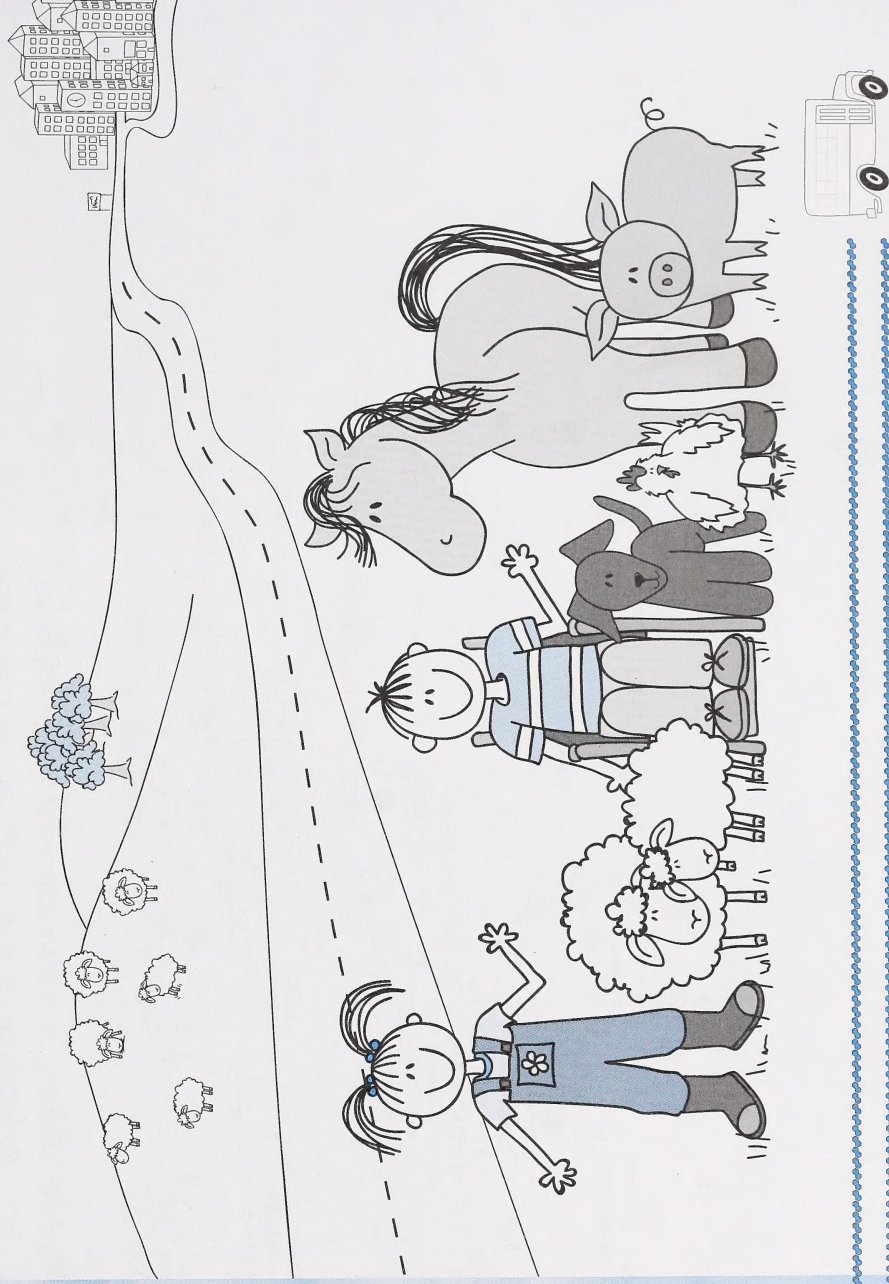
You may not realize it, but you use mathematics many times every day. You are using math when you count the money in your pocket, find a date on the calendar, or sort your toys. As you work through Grade Three Mathematics you will learn how to do many new things. You will also learn how math can be useful in solving everyday problems.

Each unit in the Grade Three Mathematics course is called a **module**. Read the titles of the modules below to find out what you will learn about this year.

MODULE 1
ADDITION AND
SUBTRACTION

MODULE 2
NUMBERS
COUNT

MODULE 3
PATTERNS
EVERYWHERE

MODULE 4
MULTIPLICATION
AND
DIVISION

MODULE 5
MEASUREMENT

MODULE 6
ADDITION AND
SUBTRACTION
OF LARGE
NUMBERS

MODULE 7
DATA
AND
CHANCE

MODULE 8
SPACE
AND
SHAPE

MODULE 9
MONEY AND
MORE
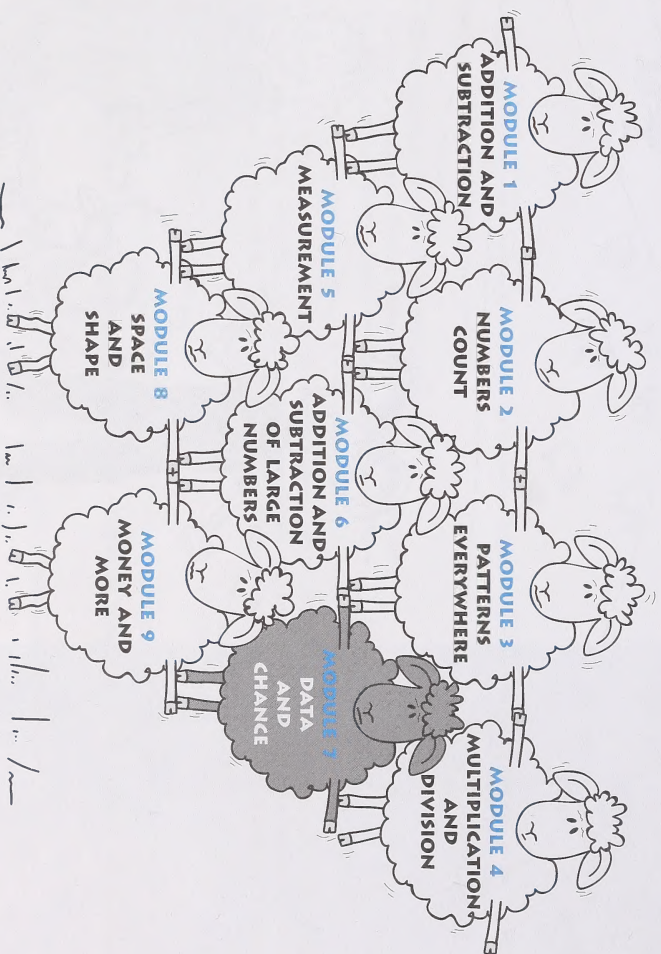
CONTENTS

MODULE 7

DATA AND CHANCE

There are many fascinating things you can learn about your friends, your family members, your community, and the world around you. In this module, you will learn how to gather information, or data, and practise making graphs to show the data in an interesting way.

You will also learn about chance. You're going to have fun making and playing games of chance, predicting outcomes about them, and testing your predictions.

Get ready to begin a very interesting module!

Help your student gather these materials and place them in the Math Box for this module. Remove and store materials from previous modules that you will not need for this module.

MATERIALS FOR MODULE 7

For Module 7, you will need the following items. Small plastic bags or plastic containers are useful to hold your materials.

- coins
- a variety of different coloured, similar objects, such as buttons or beans
- interlocking cubes (at least 15 of one colour and 5 of a different colour)
- base ten blocks
- pattern blocks
- playing cards
- number cubes (found in the Appendix) or dice
- paper clips
- graph paper (optional)
- calculator (The TI-108 is recommended.)
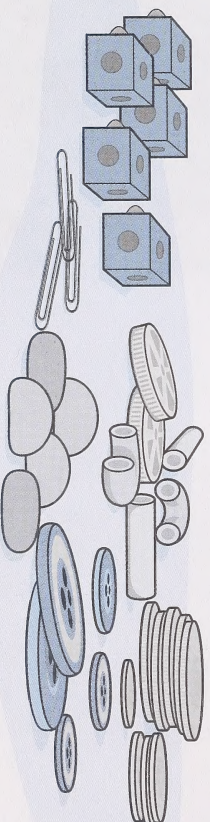
USING THE "ANSWER KEY TO THE SELF-MARKING ACTIVITIES"

In this module, you will continue to check your own work.

ANSWER KEY

This icon will tell you when to use the "Answer Key to the Self-Marking Activities" in the Appendix.

Be sure that you have completed your work before checking the answers. Look carefully for the correct question number and compare your answer with this Answer Key. Is your answer correct? If the answer is not correct, can you tell why? If you didn't understand why you made a mistake, discuss it with your home instructor. You will use self-marking activities in grade four, so it is important to learn correctly.

Monitor your student as he or she self-marks the activities. Be sure that the student completes the activities in the Student Module Booklet before looking at the answers. Show the student how to locate each question and to compare the answers. Explain that the student's own wording may not be exactly the same as the answer, but the meaning should be the same.

If your student finds it too difficult to mark the answers independently, you may wish to do it together or you may continue marking and try again in a few weeks. The goal is for the student to become comfortable and efficient with the self-marking activities. The student will use an answer key for self-marking in grade four.

DAY 1: INTERESTING DATA

Looking at family photos one day, Sarah noticed that Luke looked a little bit like her brother Oliver. She wasn't too surprised, since Luke is her cousin. Sarah wondered what similarities other family members may show.

Sarah set out to gather some interesting data about her family members.

LESSON 1

You may remember about data from Grade Two Mathematics. Do you remember what data is?

Data is another word for information. You may also remember there are different ways to gather and organize data or information.

First, Sarah was curious about the type of hair her family members had. Sarah gathered data from 12 family members. She found that five members had curly hair and seven members had straight hair.

Sarah remembered that a graph is one way of showing data. Sarah thought perhaps she could show her data on a graph. A **graph** is a type of chart that displays information by using rows and columns of pictures or bars to stand for different amounts.

Sarah created this **pictograph** or picture graph to show her data. Look carefully at Sarah's graph and talk about the following questions with your home instructor.
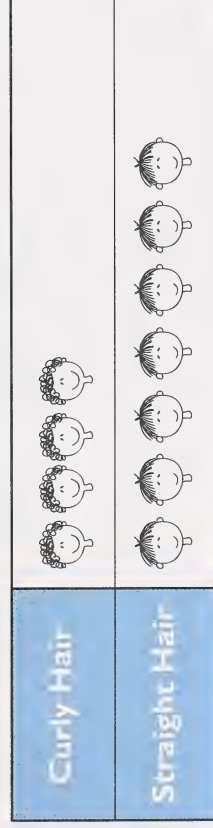
Discuss how Sarah might have gathered the data. Explain that data is factual, or true, information.

Hair Type

Curly Hair	
Straight Hair	

Is Sarah's pictograph correct? What is wrong with the graph? How can you change it? Make the change on the graph. What information did Sarah find out about the type of hair in her family?

Sarah went on to collect more data about her family's hair. Look at Sarah's **bar graph**. A bar graph shows information by using coloured bars. What data, or information, does it give you? Tell your home instructor.

My Family's Hair Colours

Number
of
People

7
6
5
4
3
2
1
0

Red   Brown   Blond   Black   Grey

Hair Colour

Sarah discovered that there were many different colours of hair in her family. She was surprised that there were so many.
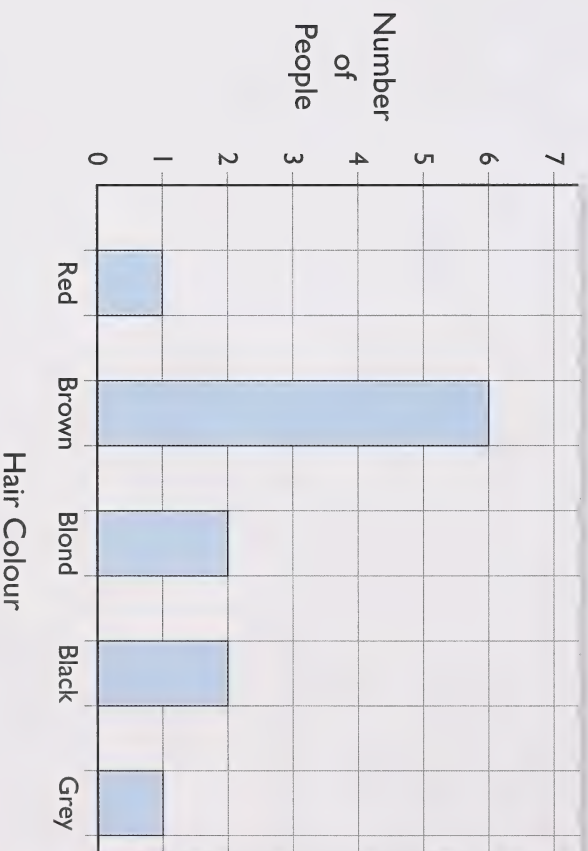
Have the student answer the questions orally. The student may notice that the graph is incorrect because it shows four curly-haired people instead of five. The student should add another head to the "Curly Hair" row. Sarah found out that most of her family members have straight hair.

The student should indicate that the graph shows the different hair colours of family members.

Explain that each solid square represents one family member.

INTERESTING DATA

Use the bar graph to answer each of the following questions in a sentence.

1. How many different colours of hair are there? _____

2. What hair colour do most family members have? _____

3. Are there more family members with red hair than blond hair? Explain.

_____

4. From how many family members did Sarah collect data for this graph? (**Hint:** Count the number of squares

filled in.) _____

By looking at the graph, Sarah saw at once that brown was the most common hair colour in her family. Red and grey were the least common colours. Two people had blond hair and two people had black hair. The number of people who had brown hair was equal to the total number of people who had every other colour hair—red, blond, black, and grey.

Graphs give instant information. They show data in a way that is easy to read and understand. A graph also answers many questions, like the ones you just answered.

Use the "Answer Key to the Self-Marking Activities" to check your work.
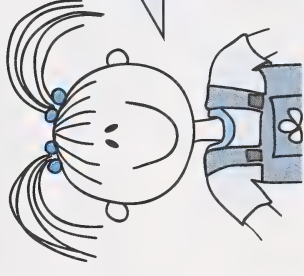
I learned many things about my family's hair type by collecting data.

LESSON 2

1. Look at the picture of some of Sarah and Luke's family members.
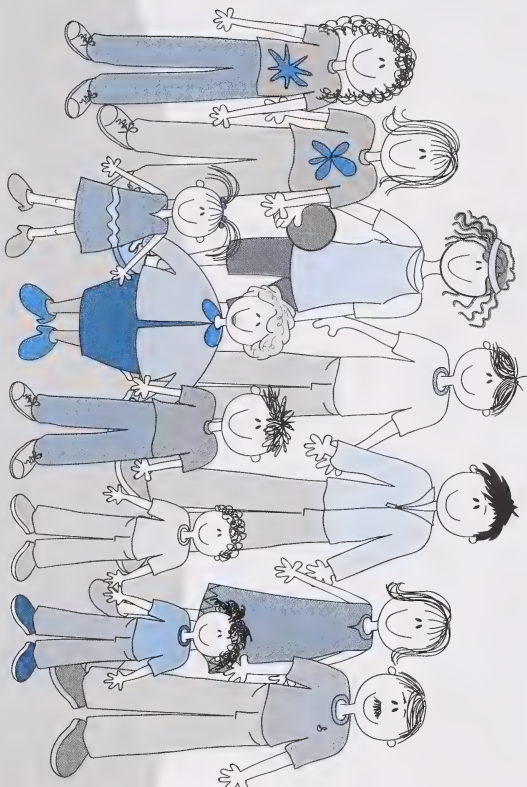
What other data can you collect by looking at the picture?

_____

_____

INTERESTING DATA

Sarah decided that she could find data on the heights of her family members. Using the previous picture, she created this pictograph.

Short or Tall

Tall People	🕴️ 🕴️ 🕴️ 🕴️ 🕴️ 🕴️ 🕴️ 🕴️
Short People	🕴️ 🕴️ 🕴️ 🕴️ 🕴️
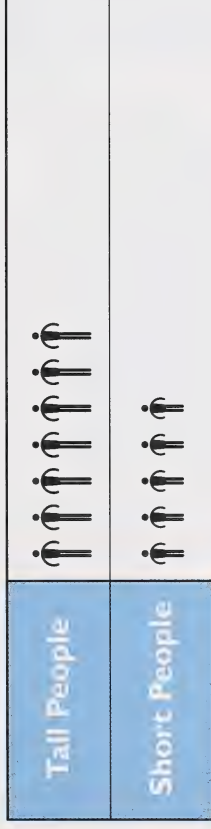
2. What does Sarah's pictograph tell you?

_____

3. a. Are there more tall people or short people in Sarah and Luke's families? _____

_____

b. Did you have to count each figure in the graph to figure that out? Why or why not?

_____

4. How many tall people are in Sarah and Luke's families? _____ How many are short? _____

_____

Help the student as needed to correctly reflect the information in the family picture. For example, the student can make a graph showing the number of males and females, similar to the Short or Tall pictograph.

5. Look again at the picture of Sarah and Luke's family members. Use the picture to make a pictograph showing other data. Give your graph a title. Tell what your rows are showing by writing labels in the shaded boxes.

6. What information, or data, does your graph show?

_____

_____

7. What are two questions you can ask about the graph you made?

• _____

_____

• _____

_____

INTERESTING DATA

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

EXTENSION ACTIVITIES

EXTENSION ACTIVITY

Many science books, encyclopedia, newspapers, and magazines use bar graphs. If you have some of these at home, look for examples of graphs. If you don't, check these items next time you go to your public library. Check the kind of information or data these graphs show.

INTERNET

Many encyclopedia, newpapers, and magazines have Internet sites. Have your home instructor help you find the site of one of these to check for graphs.

ASSIGNMENT BOOKLET
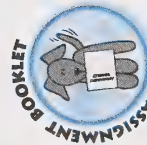
Go to Assignment Booklet 7A.
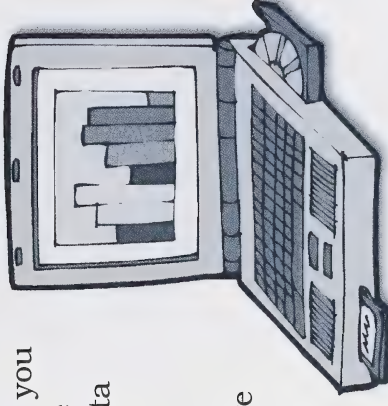
# DAY 2: A DAY'S WORTH OF DATA

Sarah and her friend Charlie were discussing how much time they spent watching television and doing other things on a typical weekday.

They thought it would be interesting to list all the activities to find out exactly how much time they did spend doing each.

So, they decided to keep track of all their activities and the time they spent on each for one day.

A DAY'S WORTH OF DATA
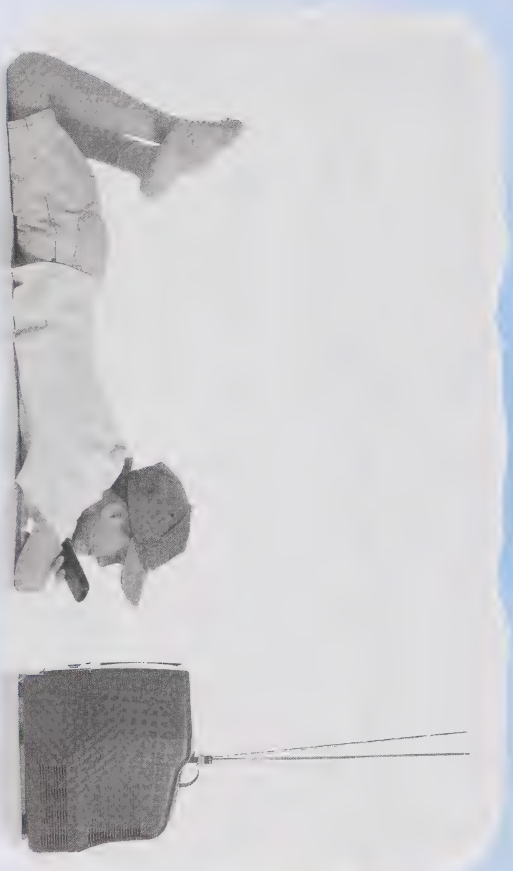
LESSON 1

On Day 1, Sarah discovered some interesting things about her family members. Today, she and her friend, Charlie, are going to check out how much time they spend on their daily activities.

Charlie wondered how they should begin collecting data. Can you think of a way? Tell your home instructor.

Charlie and Sarah made charts showing their daily schedules. They compared charts. Read Charlie's and Sarah's schedules on the following pages.

1. Help Charlie and Sarah complete their schedules by finding the amount of time each of them spent doing each activity. The first one is done for you in each chart.

Have the student think how Sarah and Charlie can begin the activity. Have the student answer orally. Elicit they make a list, or a schedule of what they do during the day.

Have the student read both Charlie's and Sarah's schedules aloud.

Charlie's Schedule

Time	Activity	Amount of Time
7:00 to 8:00	get up and get ready for the day	60 minutes or 1 hour
8:00 to 8:30	breakfast	
8:30 to 9:00	on school bus	
9:00 to 12:00	school	
12:00 to 1:00	lunch	
1:00 to 3:30	school	
3:30 to 4:00	on school bus	
4:00 to 5:30	playtime	
5:30 to 6:30	supper	
6:30 to 9:00	watch TV	
9:00	bedtime and sleep (9:00 P.M. to 7:00 A.M.)	

14

Sarah's Schedule

Time	Activity	Amount of Time
8:00 to 8:30	get up and get ready for the day	30 minutes or $\frac{1}{2}$ hour
8:30 to 9:00	breakfast	
9:00 to 12:00	school at home	
12:00 to 1:00	lunch	
1:00 to 3:30	school at home	
3:30 to 5:00	help with chores on farm	
5:00 to 5:30	piano lesson or practice	
5:30 to 6:00	playtime	
6:00 to 7:00	supper	
7:00 to 8:00	playtime	
8:00 to 8:30	watch TV	
8:30 to 9:00	read	
9:00	bedtime and sleep (9:00 P.M. to 8:00 A.M.)	

The student may have difficulty with calculating the number of hours Charlie and Sarah sleep. You could demonstrate how to calculate the time spent sleeping by using a clock.

2. a. How much time did Charlie spend sleeping? _____

b. How much time did Sarah spend sleeping? _____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

After looking at each other's schedules, Sarah and Charlie noticed that many of their activities were the same. They both ate meals, attended school, slept, played, and watched TV. They decided to put the other activities under the title Other.

1. a. Which of Charlie's activities would be "other" activities?

_____

_____

b. How much time did Charlie spend on other activities?

_____

_____

A DAY'S WORTH OF DATA

2. a. Which of Sarah's activities would be "other" activities?

_____

b. How much time did Sarah spend on other activities?

_____

Sarah and Charlie were pleased with how they collected the data, but wondered how they could show it better. Do you have any ideas?

If you said put it on a graph, you were right!

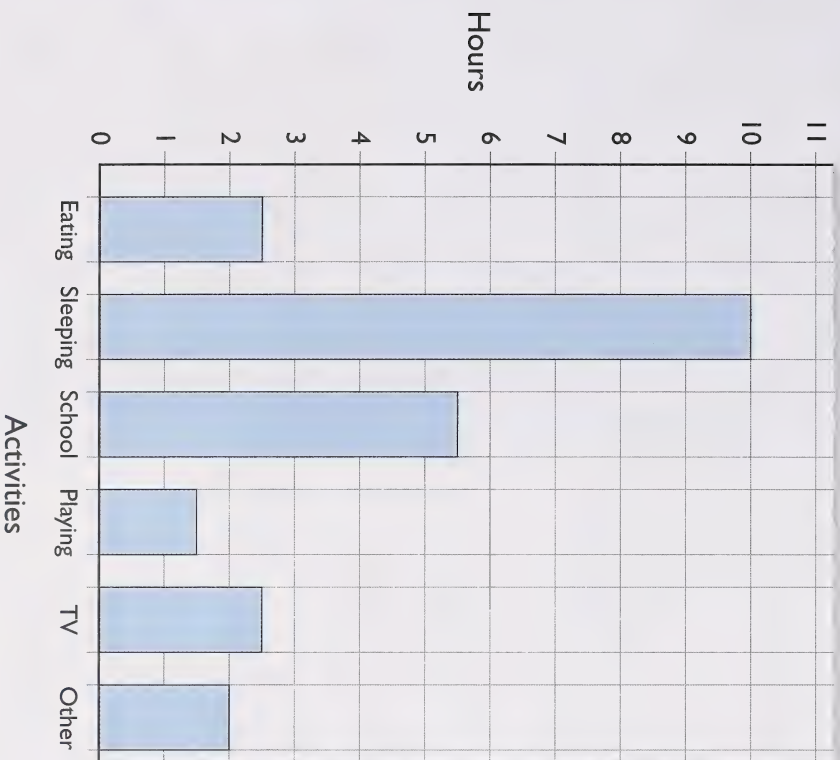Sarah and Charlie decided that a bar graph would be the best way to show their data.

Following are the graphs Charlie and Sarah made using the data from their schedules. Each box on the graph shows one hour spent on an activity.

Sarah and Charlie chose six activities from their data to show on their graphs. They put those six activities at the bottom of the graph to mark the columns.
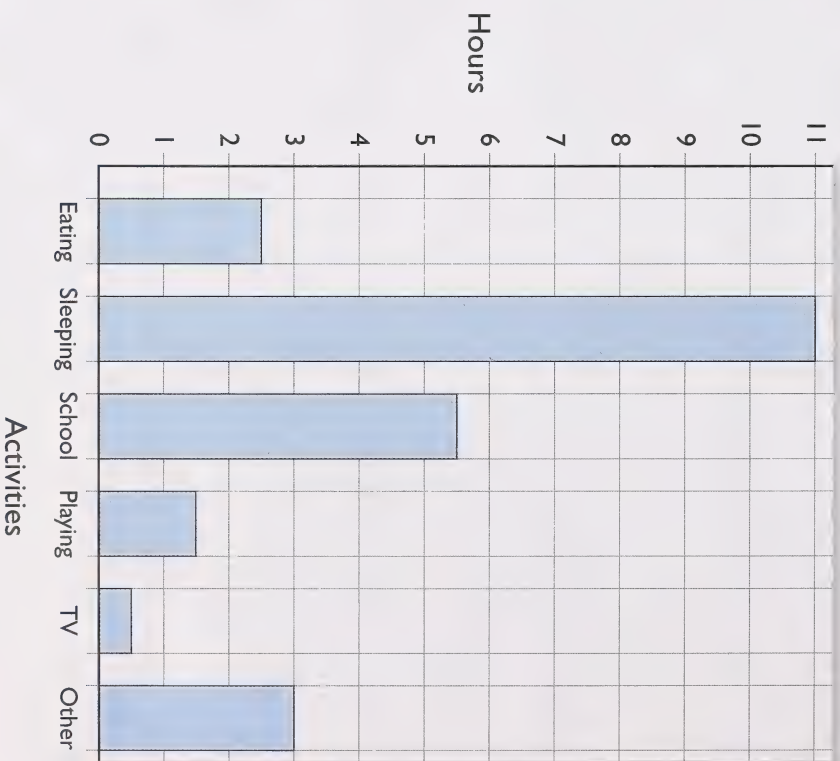
Remind the student that a bar graph has boxes or cells that are filled in for each item of data. When the boxes are filled in, they look like bars.

Charlie's Day

Hours

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

Eating   Sleeping   School   Playing   TV   Other

Activities

Sarah's Day

Hours

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

Eating   Sleeping   School   Playing   TV   Other

Activities

A DAY'S WORTH OF DATA

Charlie and Sarah found out many interesting things from their graphs. Answer these questions about the data shown in the graphs.

Have the student compare Charlie's and Sarah's graphs.

Graphs are easy to read. They can help to make quick comparisons of information too!

3. Which activity do both of them spend the most time doing? _____

4. Who spends more time watching TV? _____

5. Who spends more time sleeping? _____

6. On which activities do Sarah and Charlie spend the same amount of time? _____

7. What do the graphs show about how much time Sarah and Charlie spend playing, watching TV, or doing other activities? _____

_____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 3

Now it's your turn to find out how much time you spend on your activities during a 24-hour weekday.

What was the first thing Sarah and Charlie did? They made a schedule of a typical weekday. Think about your schedule.

Some activities you might consider are

- being with friends
- reading
- helping around the house
- sports
- music or dance lessons
- spending time with a youth group
- choir
- spending time with the family
- doing homework

1. Fill in the schedule on the next page to show your weekday activities, the times you do them, and the amount of time doing them. Use Sarah's and Charlie's schedules as examples. Use a separate piece of paper if you need more room.

Have the student answer orally. The schedule should reflect what the student does on a typical weekday.

Help the student with the schedule. You may ask the student questions such as the following to help with the thinking process: How long does it take you to eat a meal? How much time do you spend playing? Can you estimate the times? The student can add rows if needed.

A DAY'S WORTH OF DATA

Time	Activity	Amount of Time
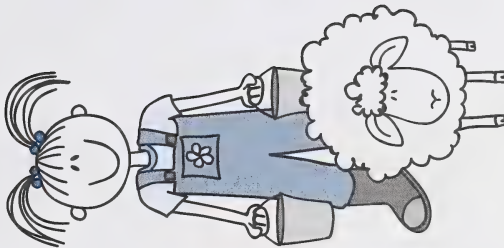
Help the student understand how to organize and present the data on the graph. Discuss that the lines that go horizontally (like the horizon) indicate the time in hours. The bars that go vertically (going up and down) show each activity. Space is provided for six activities; if required, discuss how the student's activities may be combined. Assist the student to colour a box, or part of a box, for each whole or part hour he or she spent on that activity. Check that the data is correctly displayed.
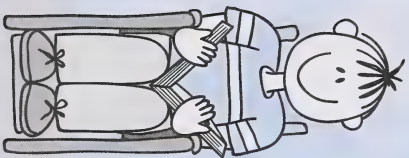
2. Now show your data on the following bar graph. Label each column with the name of an activity.

How I Spend My Day

Hours

11
10
9
8
7
6
5
4
3
2
1
0

Activities

A DAY'S WORTH OF DATA

3. Now look at the data on your graph. What conclusions can you make about how you spend your time each weekday? Write three conclusions.

- _____
  _____
- _____
  _____
- _____
  _____

ANSWER KEY

Turn to the "Answer Key to the Self-Marking Activities" to check your work.

There is no assignment in your Assignment Booklet today.

Discuss and check the conclusions the student can make about the data, such as the following:

- Most of a 24-hour day is spent sleeping.

- A lot of time is spent eating.

- More time is spent sitting or lying down than in being active.

- A lot of time is spent watching TV or doing other activities.

- If 18 hours is spent sleeping, eating, and going to school, there are 6 hours left to do other things.

Ensure the student understands that organizing data helps to answer questions.

DAY 3: RANK ORDERING DATA

Celia, Jeremy, and Samantha were discussing ways of showing the data they had collected. They wanted to answer questions, such as how you would arrange your activities in order of the amount of time you spend on them?

Sarah and Charlie also wondered about other ways of showing their data.

Today you'll learn about different ways of ranking data.

LESSON 1
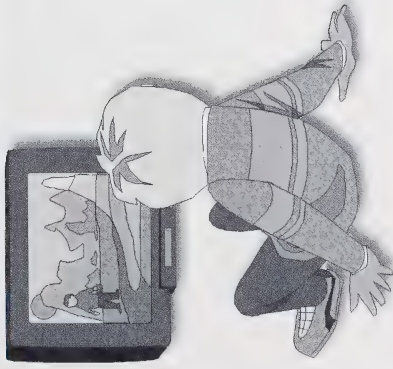
Charlie looked carefully at the data in his graph. He found the information very interesting.

Charlie told his parents that he was surprised that he spent more time watching TV than playing. He decided to rank the order of his activities. To rank items is to arrange them in order according to some measure such as importance, position, or amount.

Charlie looked at his graph that showed how he spends a weekday. He ranked the activities in order from those taking the greatest part of the day to those taking the least.

Help the student compare the data on the graph with Charlie's rank ordering. Explain that ranking means to put things in order according to some measure, such as importance, position, or amount.

Charlie wrote the following:

My activities ranked in order of greatest amount of time to least amount of time are **sleeping**, **attending school**, **watching TV**, **eating**, **doing other activities**, and **playing**.

Compare what Charlie wrote with his graph in Day 2 Lesson 2.

1. Did he rank the order of the activities correctly, in order of greatest amount of time to least amount of time?

_____

_____

2. How do you know?

_____

_____

_____

This is a copy of Charlie's graph from Day 2 Lesson 2 for reference.

Charlie's Day

Hours / Activities

Eating Sleeping School Playing TV Other

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

RANK ORDERING DATA

LESSON 2

Charlie decided to show the data on a graph using rank ordering. Can you think of a reason why he wanted to do that? His graph is shown to the right.

1. When Charlie put the activities in rank order on a bar graph, did it change the information? How do you know?

_____

_____

_____

_____

_____

_____

Charlie's Day (Rank Ordered)

Hours (vertical axis): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Activities (horizontal axis): Sleeping, School, TV, Eating, Other, Playing
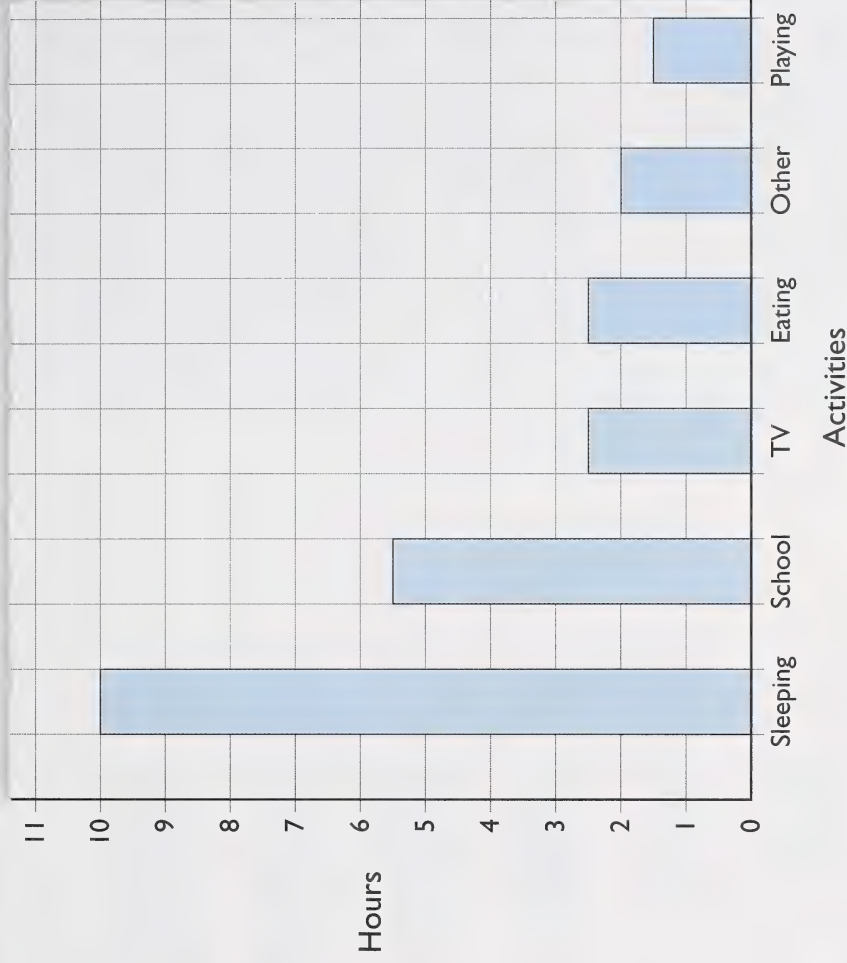
Discuss with the student that a bar graph with the data rank ordered makes comparisons easier. The data on the random bar graph and the ordered bar graph are the same—only the order is different. Having the bars vertical or horizontal doesn't make any difference to the data.

> Sleeping and school take up most of Charlie's and my day.
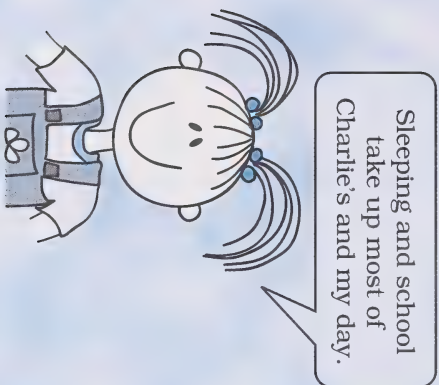
Sarah told Charlie that there is another way to show the same data–by using a bar graph. This is how Sarah displayed the data.

Charlie's Day (Rank Ordered)

Activities

- Sleeping
- School
- TV
- Eating
- Other
- Playing

Hours: 0 1 2 3 4 5 6 7 8 9 10 11

RANK ORDERING DATA

Charlie's Day (Rank Ordered)

Hours

Activities: Playing, Other, Eating, TV, School, Sleeping
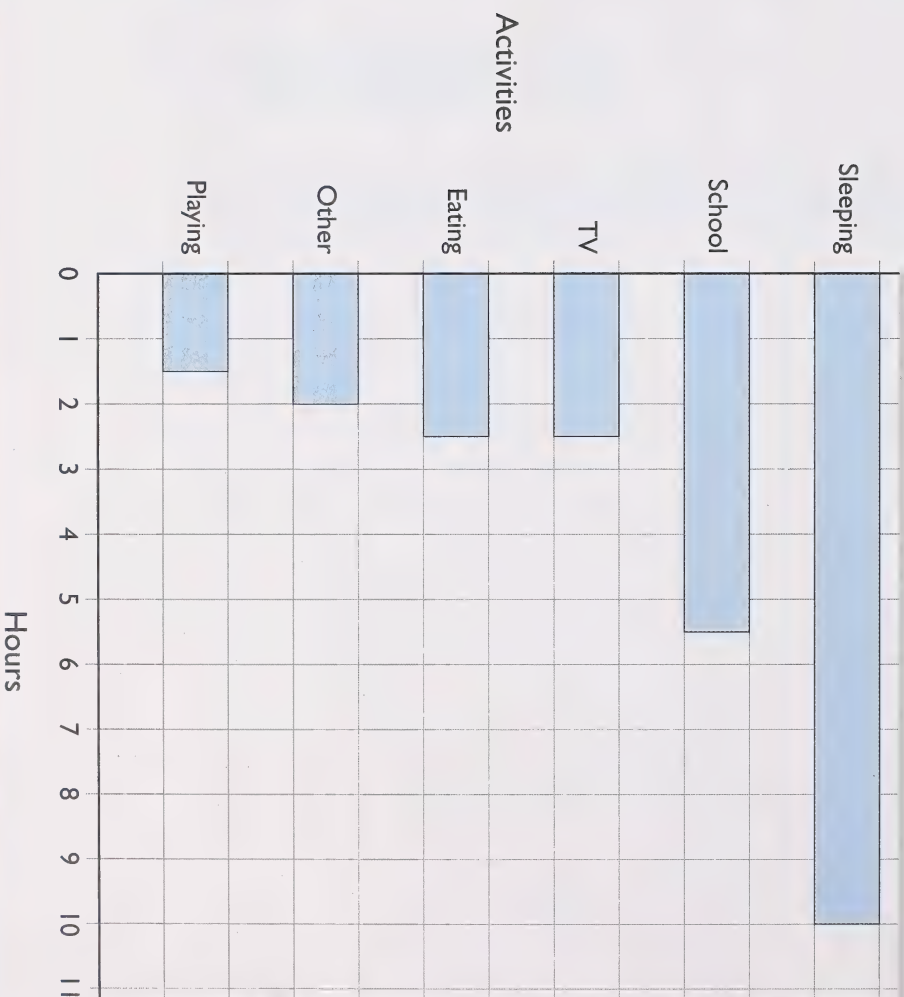
Bar graphs can be vertical, showing information in bars going up and down, or they can be horizontal, showing the information in bars that go across.

The data can be rank ordered from most to least or from least to most.

Fill in the blanks with the correct words.

2. The graph to the right shows the data rank ordered from the _____ **(least, most)** amount of time to the _____ **(least, most)** amount of time.

The bars are _____ **(vertical, horizontal)**.
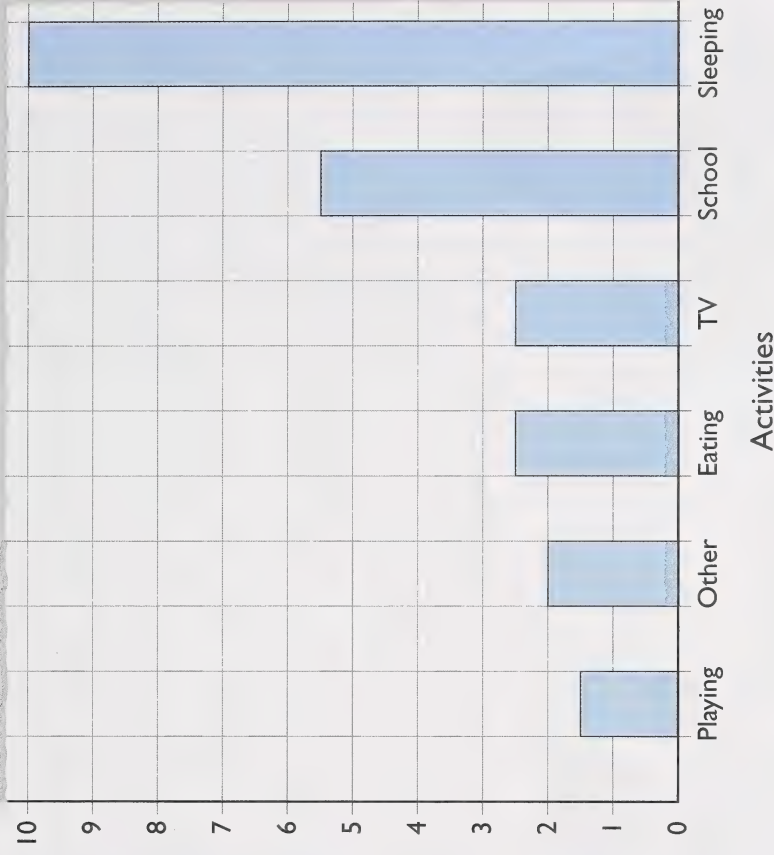
3. The graph to the right shows the data
rank ordered from the _____
(least, most)
amount of time to the _____
(least, most)
amount of time.

The bars are _____ .
(vertical, horizontal)

> In a horizontal bar graph, the bars go across.

Charlie's Day (Rank Ordered)

Activities:
- Sleeping
- School
- TV
- Eating
- Other
- Playing

Hours: 0 1 2 3 4 5 6 7 8 9 10 11

RANK ORDERING DATA
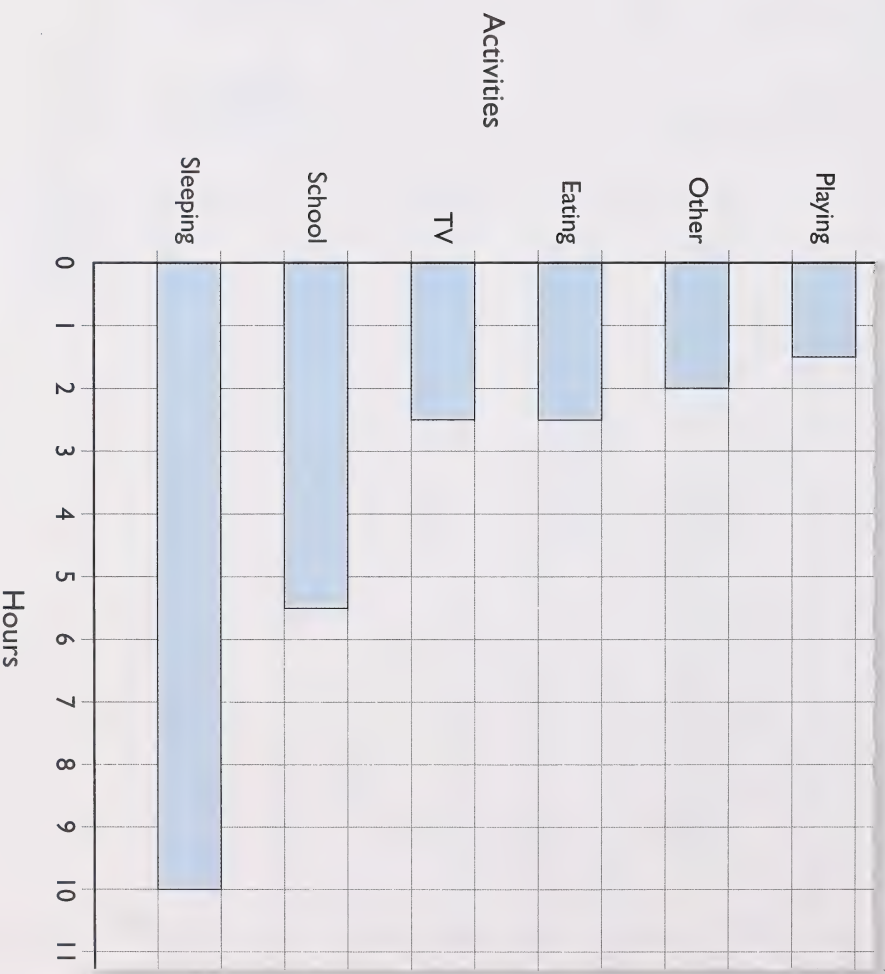
4. a. How are the graphs that are rank ordered the same as the graphs that are not rank ordered?

_____

_____

_____

  b. How are the graphs different?

_____

_____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

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32

LESSON 3

Try ranking your own activities from your data on Day 2. Show the information in the two blank graphs on the following pages.

Rank order your activities first—from those taking the greatest part of the day to those taking the least. Show this information on Graph 1. Then arrange your data from the least time to the greatest time. Show the data in the new order on Graph 2.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

Are you ready for your timed exercise? Ask your home instructor to time you for 2 minutes. Complete as many questions as you can and record the number completed.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work. Remember to record your scores here and on your Multiplication Facts Graph for Day 3.

Help the student as needed in ranking his or her activities and showing the data on the two graphs. Check that the data on the graphs is correctly displayed.

RANK ORDERING DATA
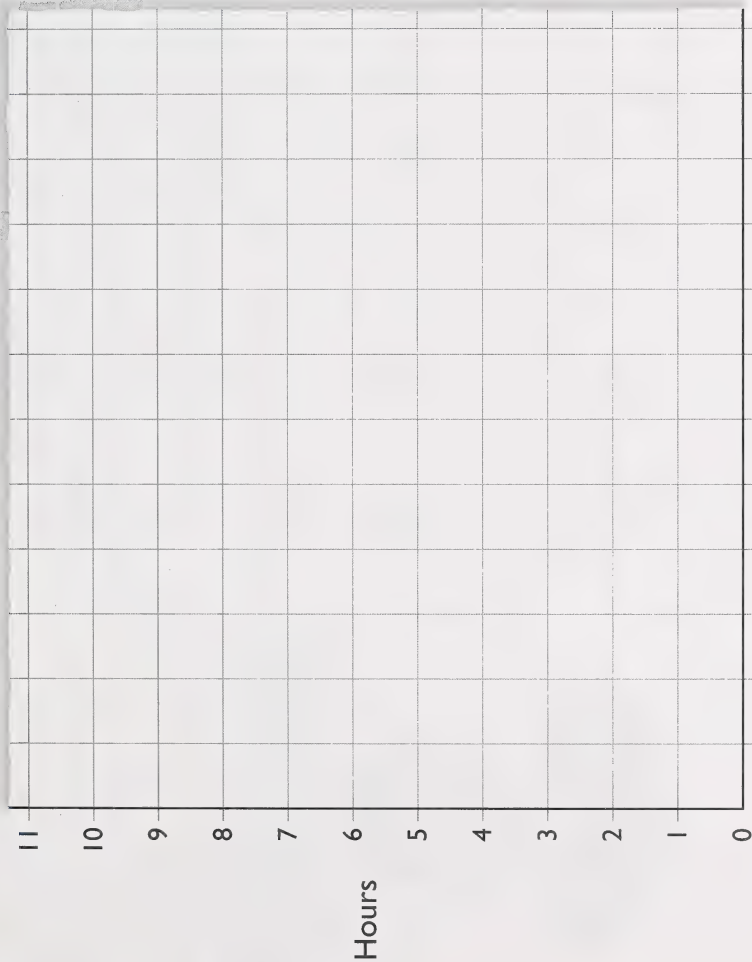
Assist the student to rank order the activities from greatest time to least time. As needed, use questions such as, On what activity do you spend the most time? Which activity takes the second-most time?

Do you spend as much time sleeping and going to school as I do?

Graph 1: How I Spend My Day

Hours

11
10
9
8
7
6
5
4
3
2
1
0

Activities

34
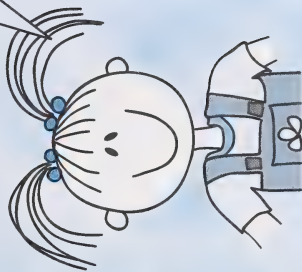
Graph 2: How I Spend My Day

Activities

Hours

0
1
2
3
4
5
6
7
8
9
10
11

What do you spend the least amount of time doing?

TIMED EXERCISE: 2 MINUTES

$3 \times 6 =$ _____ $5 \times 2 =$ _____ $8 \times 2 =$ _____ $7 \times 7 =$ _____ $2 \times 6 =$ _____ $5 \times 7 =$ _____ $9 \times 1 =$ _____

$6 \times 6 =$ _____ $5 \times 5 =$ _____ $4 \times 3 =$ _____ $6 \times 8 =$ _____ $3 \times 9 =$ _____ $0 \times 9 =$ _____

$$\begin{array}{r} 3 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times 3 \\ \hline \end{array} \qquad \begin{array}{r} 1 \\ \times 4 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 8 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times 7 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times 6 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times 4 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times 4 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$$

Number completed	
Number correct	

Go to Assignment Booklet 7A.

ASSIGNMENT BOOKLET

DAY 4: PUTTING THINGS IN ORDER

Counting items and putting them in rank order is a skill people often use in everyday life. Melissa counts and orders desserts at her job.

You learned how Sarah and Charlie rank ordered data about their daily activities. Then you rank ordered your own activities.

Along with Sarah and Luke, you will practise counting and rank ordering more data today.

PUTTING THINGS IN ORDER

LESSON 1

At the farmer's market on the weekend, Sarah and her mother sell vegetables grown on their farm.

Sarah wondered how many baskets of vegetables they sell in one day. She decided to keep track of everything sold. Can you think of a good way that would help her to do this?

Sarah decided to keep a **tally** of the baskets of vegetables she and her mother sold. Tally marks are short lines. You make one for each number you count. When you reach 4, you cross the lines to show 5. For example, 卌 shows 5.

1. This is the tally chart Sarah made. Each tally mark shows the number of baskets sold. Count the total number of each vegetable sold and put the number in the Total column.

Vegetable	Number Sold	Total
potatoes	ⳤⳤⳤ //	
tomatoes	ⳤⳤⳤ ⳤⳤⳤ /	
peas	ⳤⳤⳤ ⳤⳤⳤ ⳤⳤⳤ ///	
cucumbers	//	
beets	///	
carrots	ⳤⳤⳤ ///	

2. Rank the order of the number of baskets of vegetables sold from the least to the most.

· _____

· _____

· _____

· _____

· _____

· _____

PUTTING THINGS IN ORDER
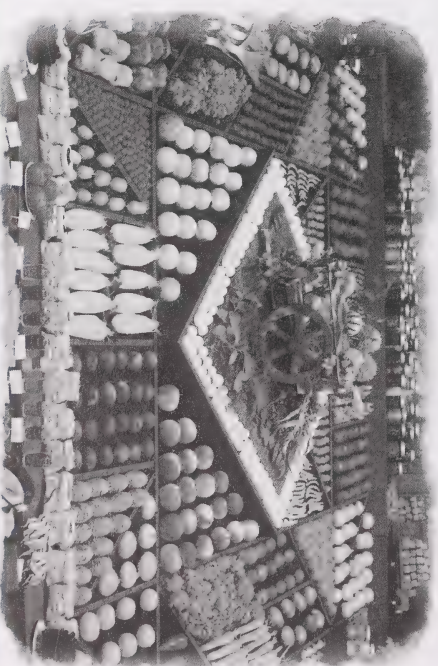
3. Sarah decided to show the data in a pictograph. Do you remember what that is? What is a pictograph?

4. Look back at the **"Hair Type"** and **"Short or Tall"** graphs in Day 1. They are pictographs. What makes them pictographs?

If necessary, remind the student that a pictograph is a graph where pictures of the data are put into rows. The two graphs from Day 1 are pictographs because they display the data as pictures.

After Sarah organized her data, she displayed it on this pictograph in rank order from least amount of vegetables sold to most.

Vegetables Sold

5. Think of three questions you can ask from the data collected on the **"Vegetables Sold"** pictograph.

• _____

   _____

• _____

   _____

• _____

   _____

Use the "Answer Key to the Self-Marking Activities" to check your work.

PUTTING THINGS IN ORDER

LESSON 2

It's your turn to put data in order. Read the following problem and then answer the question about it.

Ms. Rashid is a painter. She got a job painting at Sarah's farm. Sarah's mother told Ms. Rashid the order she wanted things painted. This is what she told Ms. Rashid:

- Paint the fence before the barn.
- Paint the shed after the barn.
- Paint the house before the fence.

1. List the order of the things Ms. Rashid painted, from first to last.

- _____
- _____
- _____
- _____

Observe the strategy your student uses. If your student is not sure how to begin, discuss drawing a picture or writing each item down.

Luke's uncle wanted to grow six kinds of flowers to start his flower business. He wanted to find out which six flowers people liked best. He asked some people what their favourite flowers were and he kept a tally.

Collecting data or gathering information in this way is called a **survey**. (You will do more work with surveys on Day 5.)

2. This is Luke's uncle's tally chart.

Count the tally marks for each of the favourite flowers. Write the number beside each one in the Total column.

Flower	Tally	Total
roses	⧵⧵⧵ ⧵⧵⧵ //	
lilies	⧵⧵⧵ /	
carnations	⧵⧵⧵ ////	
tulips	⧵⧵⧵ ⧵⧵⧵ //	
irises	///	
daffodils	⧵⧵⧵ ⧵⧵⧵ /	

PUTTING THINGS IN ORDER

3. Rank the order of the six flowers from most-liked to least-liked.

- _____
- _____
- _____
- _____
- _____
- _____

For the bar graph, have the student write the numbers vertically along the side, 0 to 13, and label that side "Number of People"; print the names of the flowers along the bottom, ranked most-liked to least-liked and labelled "Flowers." Check that the graph shows the correct ranking of flowers, from most to least liked, and that it has an appropriate title.

For the pictograph, have the student list the names of the flowers in the left-hand column. The student can then decide on a symbol for the flowers— even a circle will suffice. Have the student decide whether each symbol will stand for one or two responses. The symbol and what it represents should be entered on the blank below the graph. Check that the pictograph shows the correct ranking of flowers, from most-liked to least-liked, and that it has an appropriate title.

4. Display the data on the two graphs that follow. Arrange the data in each graph in rank order from most-liked flower to least-liked flower. Don't forget to label your graphs and give each of them a title.

a. Make a bar graph on the following blank form.

Did you remember to rank order the data from most-liked flower to least-liked flower?

b. Make a pictograph using this blank form.

What kind of symbol will you use to make your pictograph?

5. Using the data displayed on your graphs, think of three questions you can ask. Write them on the lines.

• _____

_____

• _____

_____

• _____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

> Now my uncle has a better idea which flowers he should grow for his flower business.
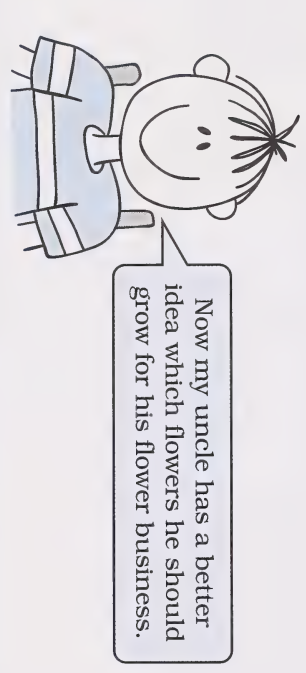
EXTENSION ACTIVITIES

Think of a topic that you would like to gather information about. For example, you might like to find information about popular toys and collect the data by counting or by surveying.
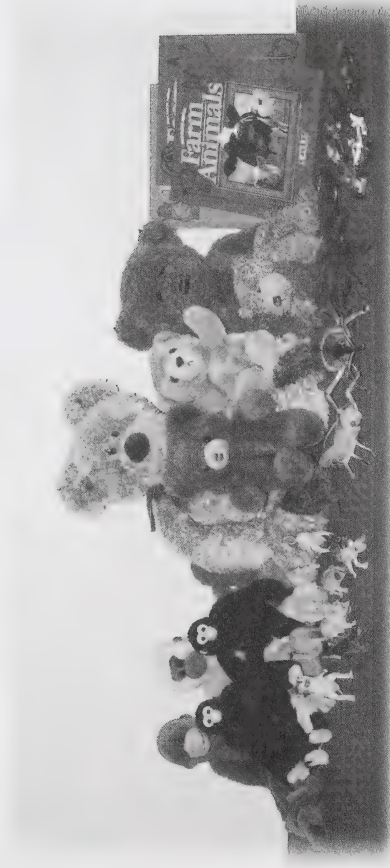
Keep a tally. Make a bar graph or pictograph to show your data. You may use your own paper to make your graph or you may use the graph paper in the Appendix.

You may submit your graph to your teacher.

Go to Assignment Booklet 7A.

DAY 5: DISPLAYING DATA IN DIFFERENT WAYS

There are different ways to collect data. You've looked at counting and surveying.

Once you've collected the data, you can display that information in different ways. You've worked with pictographs and bar graphs.

Today, you will explore more ways to display data!

DISPLAYING DATA IN DIFFERENT WAYS

LESSON 1

Taking a survey is one way to collect data. Luke's uncle took a survey to help him start his flower business. To take a survey is to collect data by asking people questions.

Luke recently got a new pair of shoes and he wondered if other children's feet were as big as his. Luke decided to survey his classmates to find out what size shoes they wore.

Shoe Size	Tally	Total
$2\frac{1}{2}$	/	
3	//	
$3\frac{1}{2}$	////	
4	//// ///	
$4\frac{1}{2}$	////	
5	//	
$5\frac{1}{2}$	/	
6	/	

1. Complete the tally chart by filling in the Total column for each shoe size.

Use the tally chart to answer the following questions.

If necessary, assist the student to find the answers from the tally chart.

2. How many students did Luke survey? _____

3. What is the most common shoe size? _____

4. What three shoe sizes are the least common?

   _____   _____   _____

5. How many children have a size-3 shoe? _____

   Luke displayed the data on two different graphs. He displayed the data on a horizontal bar graph and a pictograph. The graphs are shown on the next page.

6. Look at both of Luke's graphs. Which one do you think best shows the data? Why?

DISPLAYING DATA IN DIFFERENT WAYS

Classmates' Shoe Sizes

Shoe Sizes

Number of Children

Classmates' Shoe Sizes

Shoe Sizes

= 2 children

Number of Children
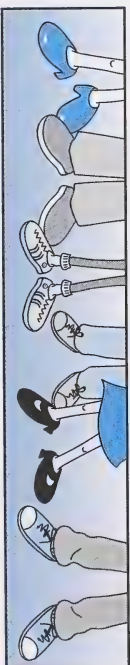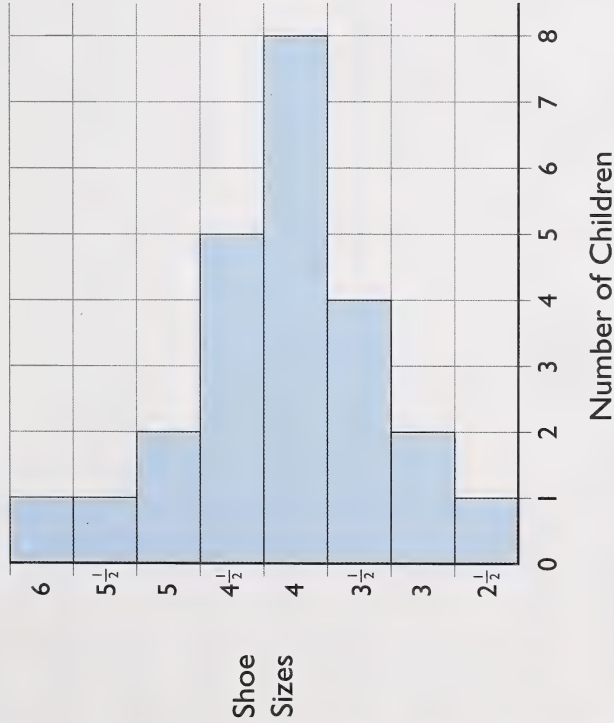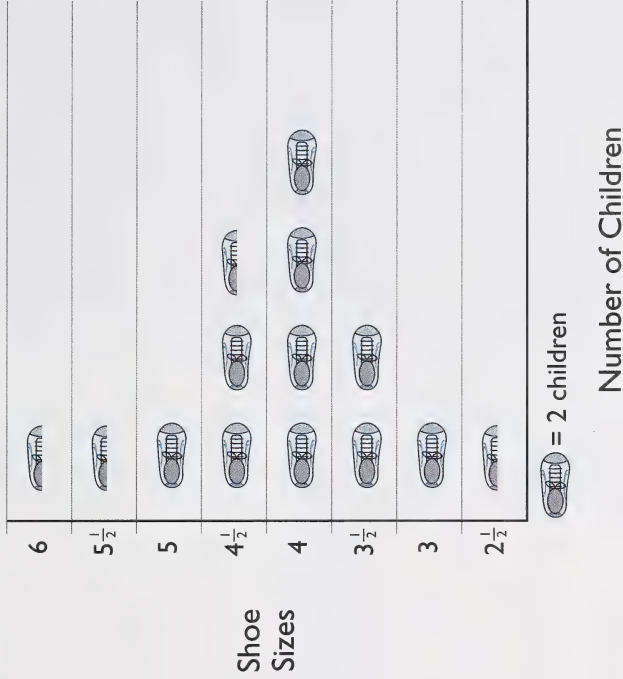
7. Why do you think Luke let each shoe picture represent two children in the pictograph?

_____

Use the "Answer Key to the Self-Marking Activities" to check your work.

ANSWER KEY

LESSON 2

Luke and his neighbour Brittany were watching a fantasy movie featuring Harry Potter. It was their favourite and they wondered if other children liked it as much as they did. Luke surveyed the grade three students in his school to find out what was their favourite type of movie.

1. Complete the tally chart by filling in the Total column.

Movie Type	Tally	Total
scary	＋＋＋ ///	
fantasy	＋＋＋ ＋＋＋ ＋＋＋ //	
dinosaur	//	
science fiction	＋＋＋ ＋＋＋ ///	
adventure	＋＋＋ ＋＋＋	

DISPLAYING DATA IN DIFFERENT WAYS
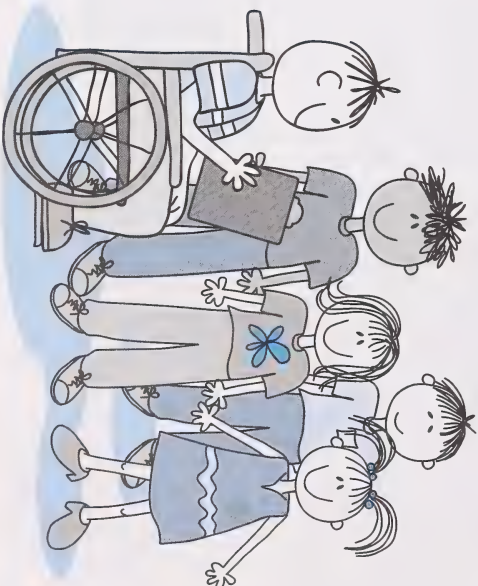
Use the data from the tally chart to answer the following questions.

2. How many students did Luke survey? _____

3. What is the favourite type of movie? _____

4. What is the least-favourite type of movie? _____

5. How many students liked the second-favourite type of movie? _____

6. How many students did not like the second-favourite type of movie? _____

7. How are questions 5 and 6 related? _____
_____

You will now show the results of Luke's survery on two graphs. You will first make a horizontal bar graph. You will then make a pictograph.

I like making graphs.

Review how to show the data on a horizontal graph. Remind the student to give the graph a title and to label each side of the graph (Number of Students for the horizontal and Type of Movie for the vertical). Check that the graph is correct. Discuss any errors.

If required, review how to show the data on a pictograph. The student is to let one picture represent two students. Discuss a possible picture. Review the labels required on the graph.

8. Show the results of Luke's survey on a horizontal bar graph.

Use the blank graph that follows.

DISPLAYING DATA IN DIFFERENT WAYS

9. Now make a picture graph—a pictograph—to show Luke's information. Let one picture represent two students.

_____

_____

Now look at the bar graph and pictograph.

10. a. How are the two graphs the same?

_____

_____

MODULE 7

55

If your student is having difficulty with graphing, you may provide more opportunities for graphing. There are blank forms for graphs in the Appendix.

You can also purchase graph paper at school-supply and stationery outlets. Use the Extension Activities as a guideline.

I wonder what colour is the favourite in my family and among my friends?
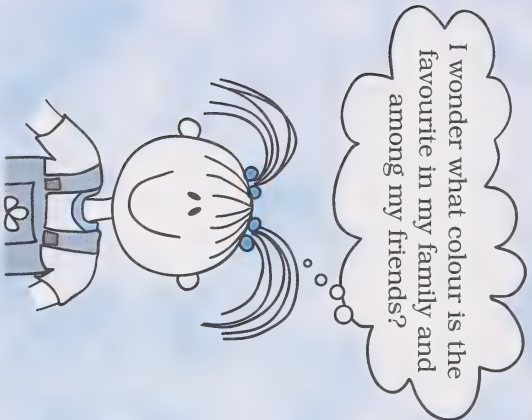
b. How are the bar graph and pictograph different?

_____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

EXTENSION ACTIVITY

EXTENSION ACTIVITIES

Make a new graph each day using different data every time. You can gather information for any topic by counting or doing a survey. Use tally marks to record your count. Make a bar graph or pictograph to show your data. Practise making vertical and horizontal bar graphs. Think of questions you can ask about your graph.

Make your graph on your own paper or use the graph paper in the Appendix. Share your graphs with your home instructor and your teacher if you like.

There is no assignment in your Assignment Booklet today.

DAY 6: MAKING PREDICTIONS

You have learned that predictions are guesses about what will happen in the future. Usually you have to gather some information before you make a prediction. Weather forecasters, for example, make predictions based on data collected by various instruments.

Are you good at predicting? For example, which animals in the photos would you predict need to be given more water? How would you gather your data for your prediction? You'll find out how to collect that kind of data today.

Sarah's friend Tessa belongs to a running club. Sarah likes to watch them run. The club was having a race day. For fun, Sarah predicted how each of the runners would place. Sarah placed the runners from 1st to 10th as shown in the chart.

Runner	Predicted Placement
Bryan	1st
Tessa	2nd
Leslie	3rd
Jafar	4th
Zoe	5th
Neil	6th
Elsabe	7th
Paul	8th
Nadia	9th
Ryan	10th

MAKING PREDICTIONS
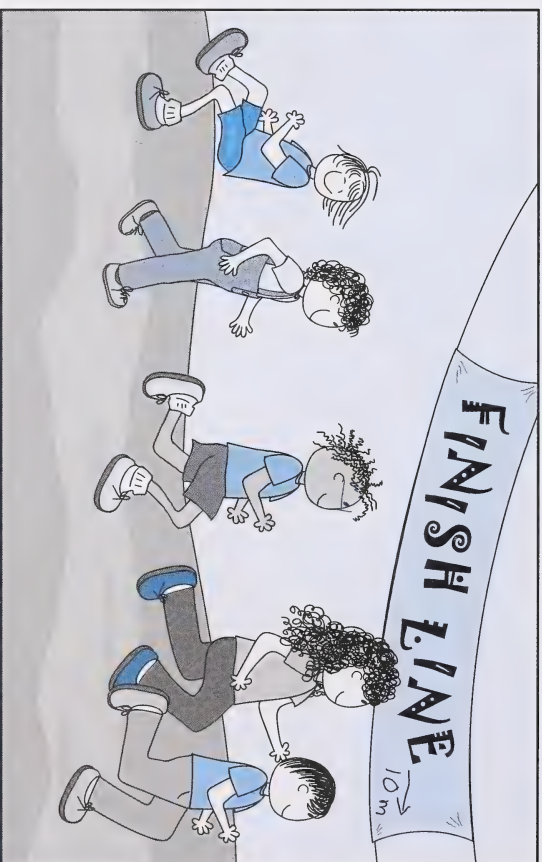
After the race, Sarah checked the results with her **predictions**. The runners placed as shown in the following chart.

I knew Bryan would come in first.

Runner	Actual Placement
Bryan	1st
Leslie	2nd
Tessa	3rd
Neil	4th
Zoe	5th
Jafar	6th
Elsabe	7th
Paul	8th
Ryan	9th
Nadia	10th
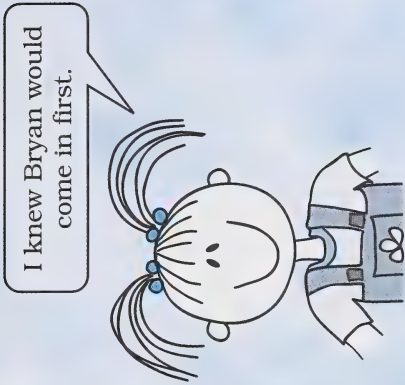
Look carefully at both charts. Did Sarah predict correctly? Were some of her predictions correct? Was she close? Since she had watched the runners closely for a few weeks, she had collected information to make good pedictions how everyone would place. As you see, Sarah's predictions were almost correct.

Have the student compare both charts and answer the questions orally. Lead the student to conclude that the prediction was quite accurate.

Sarah sent Luke an e-mail telling him how well she had predicted the race. Luke wanted a chance to predict something as well. Luke remembered an article he had read in a sports magazine that asked children to vote Yes or No to the question, "Do parents and coaches care too much about winning?"

This is how the children in the magazine responded:

Yes: 36   **No:** 27

Luke predicted how the students in his class would answer the question. Based on the results of the magazine question, Luke thought more students would say Yes than No in his class as well. He conducted a survey to check his prediction.

This is Luke's tally chart.

Response to Question	Tally	Total
Yes	✚✚✚ ✚✚✚ ✚✚✚ /	
No	✚✚✚ ////	

1. Complete the tally chart by filling in the Total column.

2. How many students did Luke survey? _____

3. How many more students said Yes than No? _____

Your student may find examples of surveys in some children's magazines or newspapers. Some TV news programs pose phone-in surveys at times. Your student may enjoy participating in an actual survey and may want to make a prediction about the results.

MAKING PREDICTIONS

4. a. If twice as many students had been asked, how many do you think

would have said Yes? _____ How many would

have said No? _____

b. How did you arrive at this answer? _____

_____

5. What did Luke predict? Was his prediction correct? _____

_____

Make a prediction yourself. Predict what your family members and friends would say if they were asked the question, "Do parents and coaches care too much about winning?" Try to survey as many people as possible. You should ask at least five people the question.

My prediction is _____
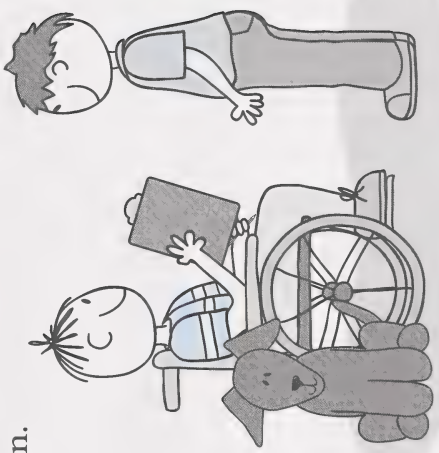
_____

_____

Have the student survey as many people as possible, including yourself. The student should survey at least 5 people. The result of the survey will be discussed on Day 7.

Discuss the results of the student's survey and compare the results to Luke's survey.

Conduct a survey to check your prediction. Keep a tally chart like Luke did.

Response to Question	Tally	Total
Yes		
No		

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

Are you ready for more practice on your multiplication facts? Ask your home instructor to time you for 2 minutes. Complete as many questions as you can and mark the number completed.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work. Write how many were correct. Remember to record your scores here and on the Multiplication Facts Graph for Day 6.

TIMED EXERCISE: 2 MINUTES

6 × 6 = _____   5 × 2 = _____   8 × 5 = _____   7 × 5 = _____   2 × 0 = _____   3 × 7 = _____   4 × 3 = _____

9 × 2 = _____   5 × 6 = _____   8 × 3 = _____   4 × 2 = _____   6 × 3 = _____   3 × 3 = _____

$$\begin{array}{r} 3 \\ \times\,2 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times\,3 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times\,7 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ \times\,5 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times\,8 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times\,2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times\,6 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ \times\,8 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times\,1 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times\,6 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\,3 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ \times\,3 \\ \hline \end{array}$$

Number completed	
Number correct	

Go to Assignment Booklet 7A.

ASSIGNMENT BOOKLET

DAY 7: FIGURING IT OUT

Rebecca enjoyed collecting toy cars. She discovered that she could get new information about her collection by doing arithmetic operations. She could add, subtract, multiply, or divide the data she had. You'll find out how to do that today with the data you collected yesterday. You will also get new information from other data and you will start collecting data for two different questions that you choose.

FIGURING IT OUT

On Day 6, you were to survey friends and family members, asking the question, "Do parents and coaches care too much about winning?"

Before you begin today's lessons, complete the following questions based on that data. Discuss your answers with your home instructor.

Have the student give the answers to the questions. Check the answers yourself as there are no given answers to these questions. Discuss the accuracy of the student's prediction.

What was your prediction? _____

How many people did you ask for their opinion? _____

How many people answered Yes? _____

How many answered No? _____

Was your prediction correct? _____

If twice as many people had been asked, about how many would have said

Yes? _____   No? _____

If you doubled your first totals to get your answers when twice the number of people are asked the question, you are correct.
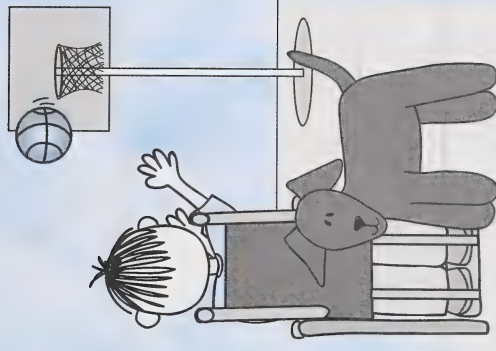
LESSON 1

Luke spent 75 minutes each weekday getting to and from school. Some of that time was used in getting Luke and his chair lifted into and out of the special bus. Luke thought it would be interesting to find out how long it took some of his friends to get to and from school. Some of his friends walked to school, some rode their bikes, and some also rode on the bus.

Luke recorded the number of minutes it took himself and some of his friends to get to and from school each day.

Name	Number of Minutes
Marek	40
Dana	20
Juan	90
Rena	15
Luke	75

Use the data in Luke's chart to answer the following questions.

FIGURING IT OUT

Luke takes five times as long to get to school as Rena does. Juan takes six times as long as Rena does!

1. Who takes the longest time getting to and from school? _____

2. Who takes the shortest time? _____

3. Who spends exactly one-half the time that Marek spends getting to and from school? _____

4. Who spends more than twice as much time as Marek spends getting to and from school? _____

5. Order the number of minutes to get to and from school each day, from the least to the greatest.

   _____ _____ _____

6. Complete a horizontal bar graph to show the data. Rank the data in order from least to most time. Give the bar graph a title and label the sides. Use the form on the next page. Notice that each box for the time stands for five minutes.

Use the "Answer Key to the Self-Marking Activities" to check your work.

68

0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

FIGURING IT OUT

LESSON 2

Sarah thought it would be interesting to find out how much time some adults watched TV. Sarah's uncle, Mr. Shaw, likes to watch TV. She asked him how many minutes of TV he watches in a week, but he wasn't sure. He said he could keep a list of the programs he watched.

Would his list help Sarah figure out the time for the week?
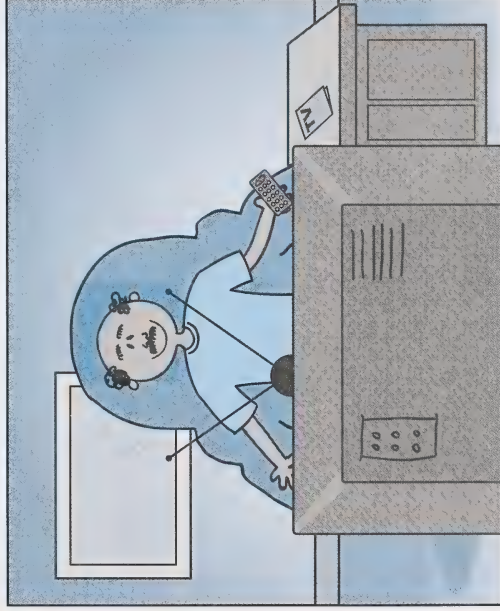
Discuss ways Sarah can find the data. Have the student answer orally. Discuss with the student that he or she must first collect the data and then organize it.

The first thing Sarah did was collect the data from her uncle. The data included programs he watched each day and the length of each one. She then organized the data on a chart. This is what it looked like.

Mr. Shaw's TV Week

Day	Programs	Time
Saturday	sports, news	4 hours
Sunday	wildlife programs, variety shows, news	5 hours
Monday	talk shows, news	3 hours
Tuesday	adventure shows, news	3 hours
Wednesday	mystery movies, news	3 hours
Thursday	talk shows, news	3 hours
Friday	comedy shows, news	3 hours

After Sarah organized the data, she figured out how many hours in one week her uncle watched TV.

1. How many hours of TV does Mr. Shaw watch in a week? Show how you got your answer. _____

_____

Have the student conclude that to figure out the hours of TV watched in a month, he or she should add 24 four times or multiply 24 by four (There are four weeks in one month.) The student may use a calculator.

> I wonder how much TV I watch in a year?

2. Now that Sarah knows how many hours her uncle watches TV in one week, how can she figure out about how many hours he watches TV in one month?

_____

3. Based on the data for one week, how many hours does Mr. Shaw watch

TV in one month? _____

MATH BOX

Take out your calculator.

Here is a challenge question.

Use your calculator to help solve this problem.

4. About how much time does Mr. Shaw spend watching TV in one year? (**Hint**: Use estimating and your calculator.)

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 3

It's your turn to learn new things about your friends and family members. First, you will collect data about them over the next few days. On Day 9, you will display the data on graphs. You are going to collect and organize data for **two** different questions.

Think about some things you would like to learn about your friends and members of your family and the world around you. You can collect data about many things. Talk about them and make a list with your home instructor showing all your ideas.

Brainstorm questions that work well for collecting data. The photos on this page may give you and your student some ideas.

FIGURING IT OUT

For your first question, choose one from your list or one from the following ideas:

- What place would you most like to visit? live?

- What is your favourite type of movie (adventure, comedy, drama, cartoon, mystery, scary)?

- What are your hobbies? pet peeves?

- What is your favourite sport? colour? ice-cream flavour? fruit? TV show? book? animal?

For your second question, ask about how much time people spend doing a certain activity in one day. Some possible activities are sleeping, eating, playing, working, doing chores, watching television, reading, or playing sports.

How are you going to collect the data for these two questions? How are you

going to keep track of the answers? _____

_____

_____

There are no suggested answers for this lesson. Discuss the questions with your student. You may have to address the issue of privacy; some people may not be willing to share some information—age, weight, religion.

Brainstorm questions to ask about an activity.

Discuss that the data can be collected by conducting surveys and by keeping a tally. Tell the student to keep the data separate for the two questions. Discuss the predictions with the student. Ensure the student conducts the surveys before Day 9.

Writing your questions on separate pages is a good way to keep your data in order. You can use the telephone or e-mail if you can't interview the people you are surveying in person.

Predict how your friends and family members will answer your questions.

How will most of them answer your first question? _____

Your second question? _____

Make sure you ask your friends and family members these two questions and collect the data before Day 9.

EXTENSION ACTIVITIES

You can collect data by doing an experiment. Take two handfuls of coloured cubes, interlocking blocks, or a variety of different-coloured, similar objects, such as buttons or dried beans. Predict about how many of each colour you chose. Now sort the objects by colour. Record the number of each colour on a tally chart, and then display the data on a bar graph. You can use your own graph paper or use the graph paper in the Appendix. Repeat the procedure as often as you like. Submit your graph or graphs to your teacher if you like.

Go to Assignment Booklet 7A.

DAY 8: PROBLEM SOLVING

Your community recreation facilities—pools, ball diamonds, rinks, gyms—have schedules set up for different events.

You have a schedule or chart set up for the times you take different school subjects. Your family may have a special calendar or chart for noting chores, lessons, and days to remember. Can you think of any charts or schedules that you use?

Understanding charts and graphs and knowing how to read the data can help you solve many everyday problems. You will use these skills to help you solve today's questions.

LESSON 1

The grades one, two, and three classes from Luke's school went on a school picnic. This is the schedule of events.

Picnic Schedule

Place	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00
Lake		Fishing			Swimming		Lunch		
Forest	Nature Hike		Bird-Watching		Sketching				
Picnic Area		Board Games			Story Time				
Sand Area			Sand Castles						
Recreation Area		Warm-up exercises		Relay Races					

Study the picnic schedule. Then write the answers to the following questions. Answer in complete sentences.

PROBLEM SOLVING

Remind the student how to use the problem solving process.

1. Which event takes the most time? _____

2. Which event takes the least amount of time? _____

3. How much time is given for lunch? _____

4. What time do the relay races start? _____

5. What time do the board games end? _____

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

During the summer holidays last year, Rena travelled by car with her parents to the mountains. When she got back to school, she found out that some of her friends also went on car journeys. She made a list of approximately how far each family travelled per day.

Rena's family	60 km
Geoffrey's family	48 km
Buffy's family	16 km
Shannon's family	85 km
Guy's family	50 km
Phil's family	110 km

Take your calculator out for the next question.

MATH BOX

78
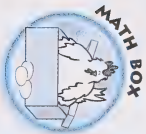
PROBLEM SOLVING

Use the information in Rena's chart to solve the following problems. Use the problem-solving steps to solve each problem. Show your work. Write the answer in a sentence. Remember that when you solve problems, you often need to add, subtract, multiply, or divide to find the answer. You may have to do more than one calculation.

Understand the problem. → Make a plan. → Try the plan. → Look back.

1. In all, how far did the families travel in one day? _____

_____

2. Whose family travelled the least distance in one day? _____

_____

3. Whose family travelled the greatest distance in one day? _____

_____

4. If each family continued to travel the same distance each day, about how many kilometres would each family travel in one week? For this question, show the number sentence. Use your calculator.

Rena's: _____   Shannon's: _____

Geoffrey's: _____   Guy's: _____

Buffy's: _____   Phil's: _____

5. Rank the order of distance travelled by the families, from greatest to least. (Just write the friend's name.)

- _____
- _____
- _____
- _____
- _____
- _____

Rank ordering helps to compare the distances travelled.

6. One of the families travelled exactly three times as far as another family? Name both families.

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

Are you ready for your timed exercise? Ask your home instructor to time you for 2 minutes. Complete as many questions as you can and mark the number you completed.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work. Remember to record your scores here and on your Multiplication Facts Graph.

4 × 2 = ___
2 + 2 = ___
3 × 9 = ___
6 × 6 = ___
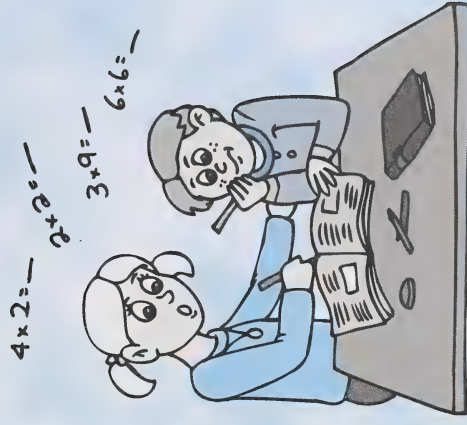
TIMED EXERCISE: 2 MINUTES

5 × 6 = _____   5 × 2 = _____   8 × 3 = _____   7 × 5 = _____   2 × 4 = _____   4 × 7 = _____   1 × 1 = _____

9 × 0 = _____   1 × 5 = _____   5 × 5 = _____   4 × 6 = _____   8 × 6 = _____   3 × 7 = _____

$$\begin{array}{r} 9 \\ \times\ 2 \\ \hline \end{array}\qquad \begin{array}{r} 3 \\ \times\ 3 \\ \hline \end{array}\qquad \begin{array}{r} 5 \\ \times\ 4 \\ \hline \end{array}\qquad \begin{array}{r} 1 \\ \times\ 8 \\ \hline \end{array}\qquad \begin{array}{r} 4 \\ \times\ 8 \\ \hline \end{array}\qquad \begin{array}{r} 9 \\ \times\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times\ 7 \\ \hline \end{array}\qquad \begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}\qquad \begin{array}{r} 5 \\ \times\ 8 \\ \hline \end{array}\qquad \begin{array}{r} 7 \\ \times\ 2 \\ \hline \end{array}\qquad \begin{array}{r} 6 \\ \times\ 3 \\ \hline \end{array}\qquad \begin{array}{r} 2 \\ \times\ 8 \\ \hline \end{array}$$

ASSIGNMENT BOOKLET

82

Number completed	
Number correct	

DAY 9: GRAPHING MY DATA

You have been busy surveying friends and family members. Have you collected all your data from your friends and family members? Were you surprised by some of the information you learned?

Today you're going to graph that data. You will send one graph to your teacher.
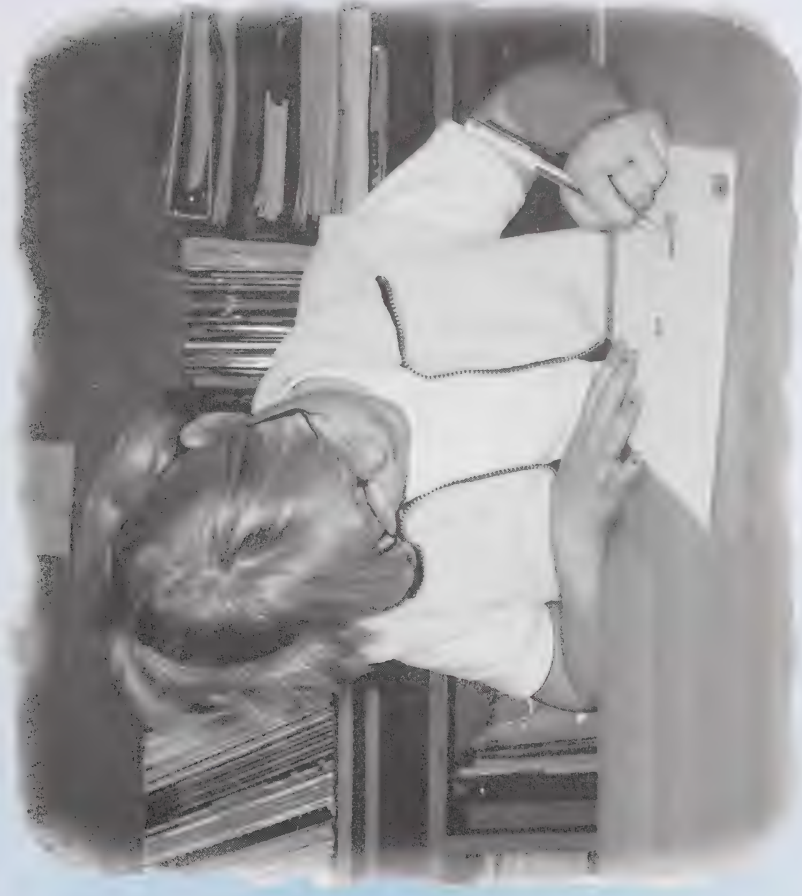
There are no self-marking activities today. You will be working with the data you collected from your friends and family members on Day 7: Lesson 3. You collected two sets of data about your friends and family members. Your home instructor will help you answer the questions in the Student Module Booklet.

You will make two graphs, and you'll send in one of the graphs to your teacher as part of your Day 9 assignment.

Graph 1

What was the first question you asked? _____

How did you organize the data? _____

What kind of graph will you choose to show your data? _____
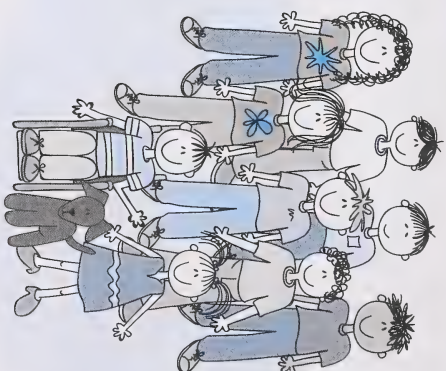
Have the student write the answers on the lines. Correct them yourself.

A tally chart and writing out the information are ways of organizing data. Discuss the two different kinds of graphs the student is familiar with (bar graph and pictograph).

GRAPHING MY DATA

Draw a graph to show your data on your own paper or use graph paper from the Appendix.

After the student decides on the type of graph to make, have him or her draw it on his or her own paper or graph paper from the Appendix. With the student, check to make sure the data on the graph is correct.

Check your graph. Is it correct? Does it show all the data clearly? Did you give it a title? Did you label the sides?

As you check the graph with the student, have him or her answer the questions orally. Discuss the information the student discovered. Ensure the questions about the graph make sense.

Write three questions someone could ask about the graph.

● _____

_____

● _____

_____

● _____

_____

What did you find out about your friends and family members?

Have the student repeat the activity with the second question.

Graph 2

The second question was about how much time people spend doing an activity. Which activity did you choose to ask about?

_____

How did you organize the data? _____

How can you show the data in a graph? On what kind of graph will you show the data? _____

Draw a graph to show your data using your own paper or the graph paper from the Appendix.

Check your graph. Is it correct? Does it show all the data clearly? Did you give the graph a title? Did you label the sides?

As you check the graph with the student, have him or her answer the questions orally. Discuss the information the student discovered.

> What did you find out about your friends and family members with this question?

GRAPHING MY DATA

Write three questions someone could ask about the graph.

- _____
  _____
  _____

- _____
  _____
  _____

- _____
  _____
  _____

You have determined how much time your friends and family members spend on an activity in one day. How much time will they spend on that activity in one week? Write your answers in the chart on the following page. If there are more names, write them on a separate piece of paper.

Name	Time Spent in One Day	Time Spent in One Week

You predicted how your friends and family members would answer your two questions. How close were your predictions to the answers?

What new things did you find out about your friends and family members with these questions?

Discuss the student's predictions and how surveying the people and graphing the data helped him or her learn new things about them.

ASSIGNMENT BOOKLET

Go to Assignment Booklet 7A. When you have finished today's assignment, choose the graph that you will send to your teacher. Remember to complete the Student's Checklist and Student's Comments about Days 1 to 9.

Complete the Home Instructor's Checklist and add any comments you have. A mailing checklist has been included in Assignment Booklet 7A to help you and your student gather the necessary assignments.

DAY 10: ALL ABOUT DATA AND GRAPHS

You have learned some really interesting things about collecting, organizing, and displaying data. Today, you're going to practise what you learned.

Natalie is in Luke's class at school. In Lesson 1, you'll discover many things about Natalie and Luke's class and the number of books they read.

Story
Time

LESSON 1

Many of the students in Luke's class love to read. Their teacher decided to keep track of how many books each student reads in one month. She kept a tally chart in the room for the students to mark each time they finished a book. At the end of the month, the chart looked like the one to the right.

1. Complete the tally chart by filling in the Total column.

Student's Name	Tally	Total
Luke	////	
Randi	//	
Juan	‖‖ ‖‖ /	
Marek	‖‖	
Dana	‖‖ /	
Rena	///	
Enzo	‖‖ ////	
Sean	‖‖ //	
Macey	‖‖	
Lydia	‖‖ ‖‖ ///	
Grace	‖‖	
Natalie	‖‖ ‖‖	
Freddie	/	
David	‖‖ ///	

ALL ABOUT DATA AND GRAPHS

2. a. Predict which five students will read the most books during the summer holidays (July and August).

_____

_____

b. Why did you choose those students? _____

3. a. Write the names of three students who read the same number of books.

_____

b. How many books did each of these students read? _____

4. a. Who read the most books? _____

b. Who read the least books? _____

5. How many more books would Sean have to read to have the same number as Juan? _____

6. a. If each student was to continue reading the same number of books every month, how could you figure out how many books each student would read in one year?

_____

_____

b. If each student continued to read the same number of books each month, write the number of books each student would read in one year.

Luke: _____   Randi: _____   Juan: _____   Marek: _____

Dana: _____   Rena: _____   Enzo: _____   Sean: _____

Macey: _____   Lydia: _____   Grace: _____   Natalie: _____

Freddie: _____   David: _____

7. Create three questions you could ask about the data.

• _____

• _____

• _____

ALL ABOUT DATA AND GRAPHING

LESSON 2

The following pictograph shows the amount of a certain kind of food some dogs might eat each week.

Use the pictograph to answer questions 1 and 2 that follow by filling in the circle beside the correct answer.

Amount of Food Some Dogs Eat Each Week
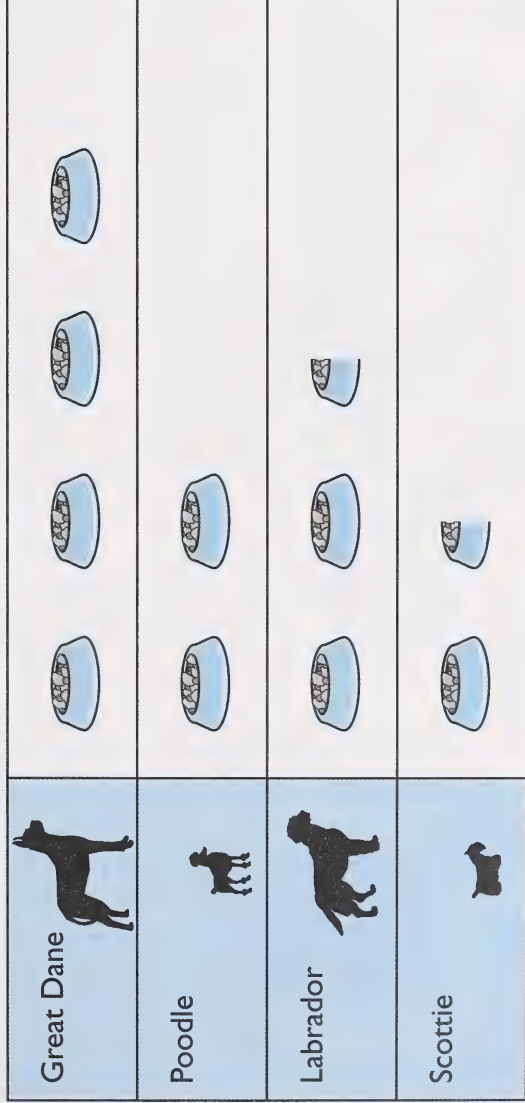
= 2 kg

1. In all, how many kilograms of dog food do these dogs eat each week?

○ 11 kg
○ 17 kg
○ 20 kg
○ 22 kg

2. In a week, how many more kilograms of dog food does the labrador eat than the poodle?

○ $\frac{1}{2}$ kg
○ 1 kg
○ 2 kg
○ 4 kg

Study the shapes in the following box to answer question 3.

ALL ABOUT DATA AND GRAPHS
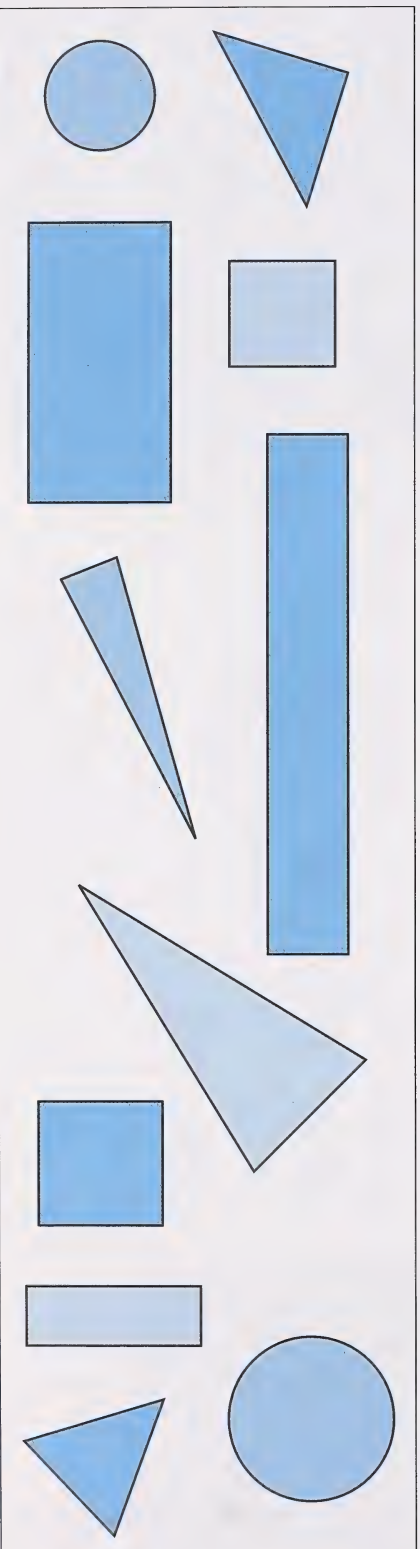
3. Which graph shows the correct number of shapes in the box? Fill in the circle beside a, b, c, or d that shows the correct graph.

a. ○

b. ○

c. ○

d. ○
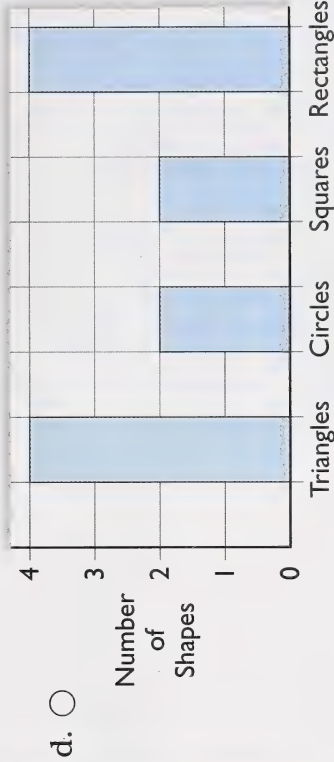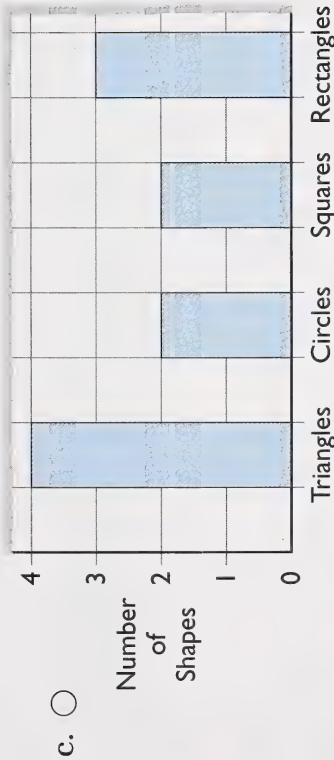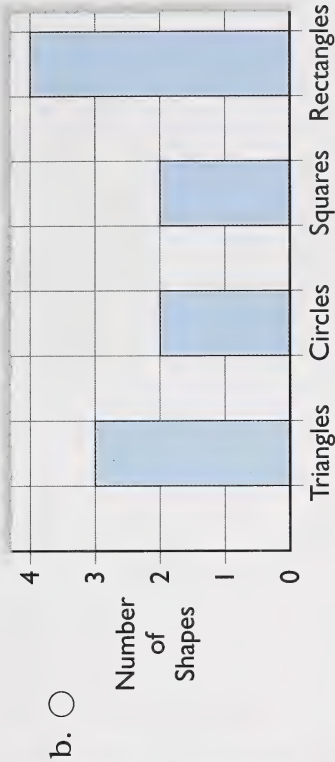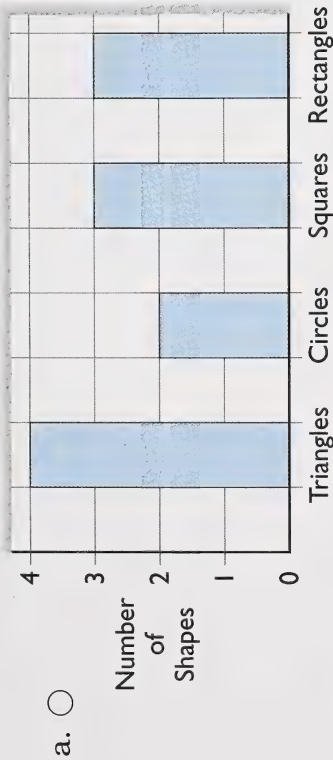
LESSON 3

Thirteen children were surveyed to name their favourite ice-cream flavour.
These were the flavours they chose:

- chocolate
- chocolate
- strawberry
- chocolate

- strawberry
- vanilla
- strawberry

- vanilla
- chocolate
- chocolate

- chocolate
- vanilla
- vanilla

1. Use the survey results to complete the following tally chart to organize
   the children's choices and to show the data. Put appropriate labels at the
   top of each column.

Favourite Ice-Cream Flavours

Ensure the student has written
"Ice-Cream Flavours", "Tally," and
"Total" in the first row of the chart.
Check the tally numbers.

ALL ABOUT DATA AND GRAPHING

2. Make a pictograph to show the ice-cream flavour choices.

With the student, check the data on the graph.

3. Rank the choices from most favourite to least favourite.

_____, _____, _____

How would the graph change if you added your favourite ice-cream flavour? You can add the change on the graph now if you like. Which flavours do you think your friends and family members would choose?

If the student's choice is a different flavour, you could suggest making a new pictograph.

Have the student answer orally.

Discuss the questions with the student.

ANSWER KEY Use the "Answer Key to Self-Marking Activities" in the Appendix to check your work.

ASSIGNMENT BOOKLET Go to Assignment Booklet 7A.

DAY 11: HOW WILL IT TURN OUT?

Have you and your family ever played a game with dice? Or with cards? Do you always get the number or card you want? Chances are you don't.

You're going to have fun exploring games of chance today.
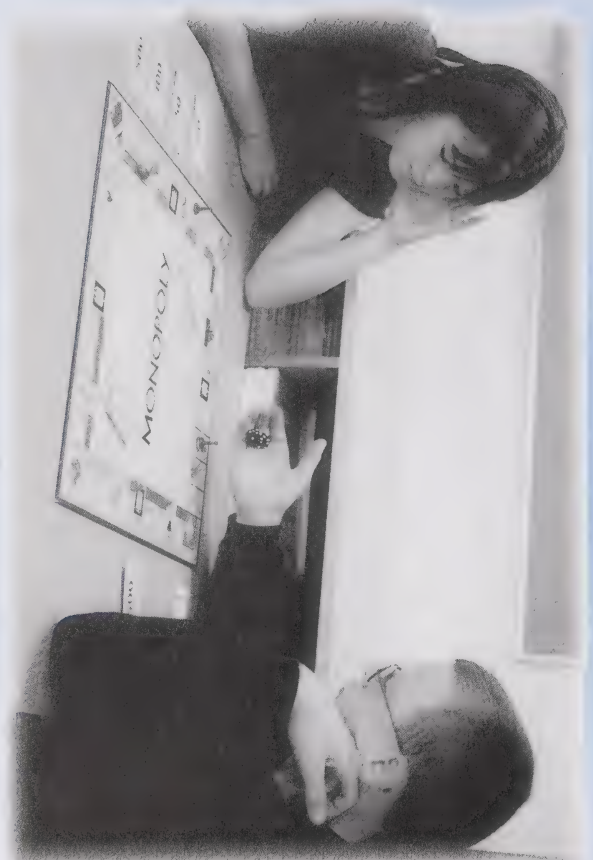
HOW WILL IT TURN OUT?

Look at the picture of the girl flipping the coin. What do you think will happen when it lands? Try it yourself.

MATH BOX

From your Math Box, take out a coin and a deck of cards with the picture cards removed.

You also need dice or number cubes for this lesson. In the Appendix you will find the page of "Number Cubes." Carefully cut out each number cube. Have your home instuctor help you assemble them. Keep the number cubes in your Math Box.

1. Flip a coin. If it lands showing the head on the coin, it's called **heads**. If it lands on the other side, it's called **tails**. What happened?

Have the student answer orally: The coin will land on one side or the other (heads or tails).

You and your student can work together to cut out the number cubes. Fold on the lines and then tape the ends securely.

Discuss with the student that it is difficult to know which card will be picked before you see it.

Look at the picture of the boy picking a card. Can he predict which card he picked?

2. Pick a card out of a deck of cards. What card did you pick? Did you know what card it would be before you picked it? Why or why not?

_____

HOW WILL IT TURN OUT?

3. Look at the picture of the girl rolling the number cube. What do you think will happen when it lands? Roll a number cube yourself. What number turned up?

The student may say that a number from one to six will turn up.

_____

4. Why do you think people use things like number cubes, dice, cards, and coin flips?

People use things like number cubes, dice, cards, and coin flips to determine who wins something or who goes first—in games or just for fun.

_____

_____

Tell your home instructor about a time you and your friends have flipped a coin, picked a card, or rolled number cubes.

Have the student describe a time he or she used one of these.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

Look at the pictures. Tell what is happening in each game.

What determines who will win in each game? Use the games from the photo to answer the following questions.

HOW WILL IT TURN OUT?

1. **Chance** is the possibility of something happening. In which game would you have a good chance of winning? Why?

_____

2. In which game would you have little chance of winning? Why?

_____

3. In which game could you better your chances of winning? Why?

_____

Talk to your home instructor about other games you know that involve chance.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

Discuss the term *chance*. Ask the student what he or she thinks it means. Explain that it means something that has a possibility of happening. In games, it's sometimes referred to as luck.

Discuss the games illustrated and the role of chance in each to assist the student with answering the questions.

LESSON 3

Try an experiment with chance. You will need the number cube, coin, and deck of cards from Lesson 1.

If you toss a coin ten times, predict the number of times your coin toss will

be **tails**. _____

Flip your coin 10 times to find out. In the tally chart record each **outcome** or how each toss comes out.

Outcome	Tally	Total
heads		
tails		

1. Was your prediction accurate? Write about your results.

_____

_____

If you roll the number cube ten times, predict the number of times you will

roll the number 3. _____

The picture cards should be removed from the deck. Remind the student that the ace stands for one.

Explain that outcome means how something turns out.

HOW WILL IT TURN OUT?

Roll your number cube ten times. Record each outcome in the tally chart and complete the Total column.

Outcome	Tally	Total
1		
2		
3		
4		
5		
6		

2. Was your prediction accurate? Write about your results.

_____

_____

Pick a card from a deck of cards and then put it back and pick a different card. If you continue ten times in

this manner, predict the number of times you will pick a ten out of the deck of cards. _____

Select 10 cards from the deck. Record each outcome in the tally chart. Write the totals for the cards you picked in the Total column.

Outcome	Tally	Total
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

3. Was your prediction accurate? Write about your results.

_____

_____

HOW WILL IT TURN OUT?

4. Can you predict an accurate outcome that is based on chance? Why or why not?

_____

Discuss how outcomes based on chance cannot be accurately predicted because any outcome is possible.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

EXTENSION ACTIVITY

If you have a game where chance is involved, play it now with your home instructor.

Also, the Internet has interactive games of chance that you may wish to examine for your student to try. One possible site is http://www.snakes-and-ladders.com.

ASSIGNMENT BOOKLET

Go to Assignment Booklet 7A.

DAY 12: WHAT ARE THE CHANCES?

Sarah's cousins are coming for a visit this July. What are the chances that the day will be sunny and hot? Can you predict the weather?

You learned on Day 11 that you can't be sure of the outcome in predicting a game involving chance. Can you predict the weather or predict how much you'll grow this year?

Today, you will learn words that describe the chance of something happening.

WHAT ARE THE CHANCES?

LESSON 1

Sarah and her family went to a farm fair held in a nearby town. There was a raffle for an insulated doghouse. Sarah thought it would be perfect for her dog, Puddles. She bought a ticket for the raffle.
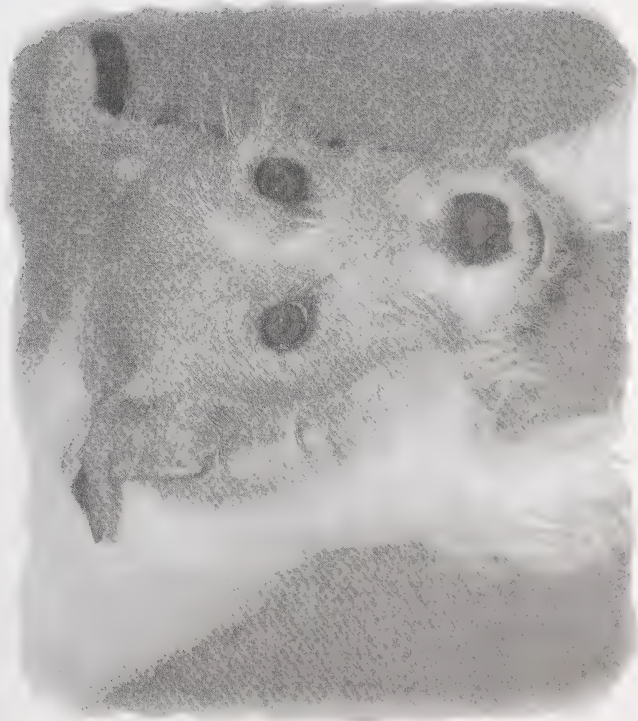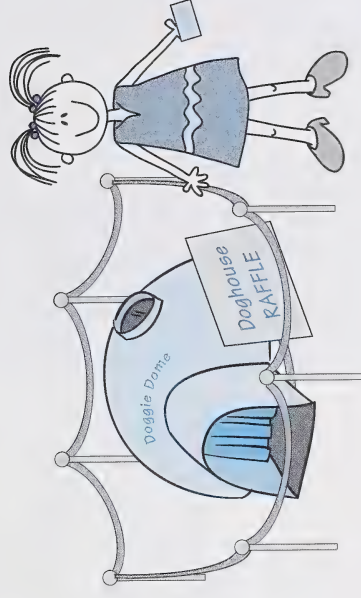
"I just know I'm going to win the dog house," she told her mother.

"Don't get your hopes up too high, Sarah," replied her mother. "They're selling 500 tickets for the raffle."

Review that there are 500 people who could buy tickets. Because she bought a ticket, Sarah does have a chance of winning. It is less likely she will win because so many tickets are being sold.

Discuss the terms *likely* and *unlikely*.

Discuss these questions with your home instructor. Why did Sarah's mother tell Sarah not to get her hopes up?

Does Sarah have a chance of winning the doghouse? Why or why not?

Do you think she will **likely** win? Or is it **unlikely** that she will win? Likely is used when something will probably happen or is expected to happen. Another word for likely is **probably**.

If something is unlikely to happen, that means it probably won't happen or is not expected.

1. Another word for "likely" is ―――――――――.

2. Another way of saying "probably not" is ―――――――――.

Fill in the blanks with the words **likely** or **unlikely**.

3. Marta studied hard for the test. Stephanie didn't study at all and didn't finish the test. Stephanie is ――――――― to do well on the test.

4. Al plays his cello very well. Chances are that he will ――――――― win one of the prizes at the festival.

5. Our community hockey team has won most of its games this year and it's

_____ they will make it to the playoffs.

6. Louise has a bad cold and has spent the day in bed. It's

_____ she will be able to go to the party tonight.

LESSON 2

There are other words to use when talking about outcomes. Would the words **likely** or **unlikely** fit in this sentence?

It is _____ that the Sun will rise tomorrow.

Can you think of a better word that will fit in the sentence? What is it?

_____

If you said certain, you were right.
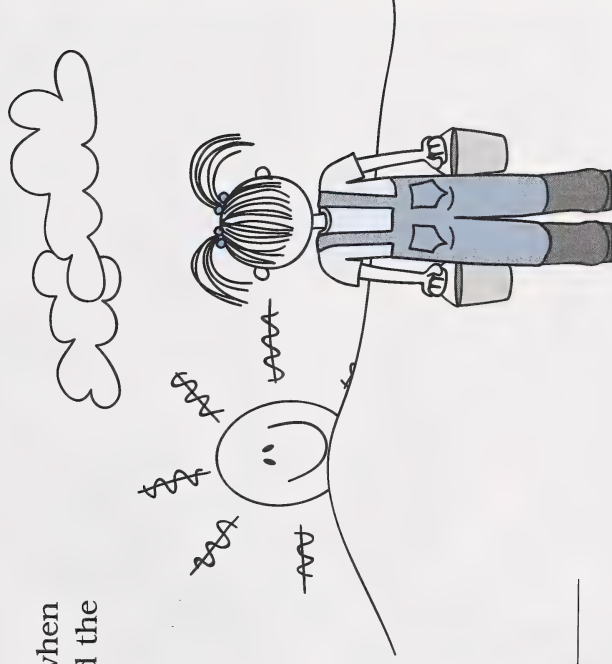
Explain that neither *likely* nor *unlikely* fits because the outcome is known—it is *certain* to happen. The Sun always rises.

What word would fit in this sentence?

It is _____ that everyone alive today will live to be 300 years old.

If you said **impossible**, you were right.

Sometimes you just don't know if an event will happen or not. You can't even know if it's likely to happen or not. What word would fit in this sentence?

It is _____ whether it will rain tomorrow.

Did you say the outcome is **uncertain**? Predicting weather is uncertain.

Look up the words **certain**, **impossible**, and **uncertain** in your dictionary or check the meanings in the Glossary of this Student Module Booklet. Read the definitions aloud. Talk about these words with your home instructor.
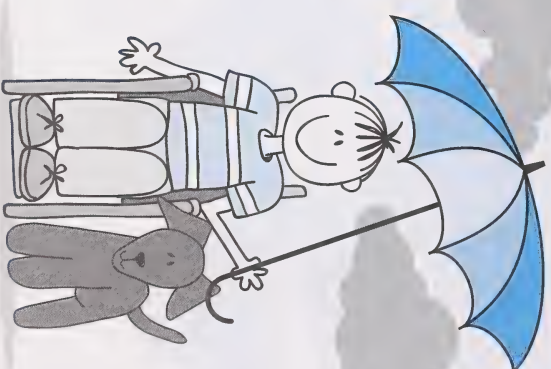
WHAT ARE THE CHANCES?

Write **certain**, **impossible**, or **uncertain** beside each sentence. Explain to your home instructor why you chose that word.

Discuss the terms *certain*, *uncertain*, and *impossible*. Certain means something is sure or definite to happen. Impossible means something cannot happen or be. Uncertain means you just don't know. Use every opportunity to discuss "chance" words (include *never*, *always*, *unlikely*, *probably*, and so on) as the language of chance can be difficult for the student.

1. A dog will fly. _____

2. You will have a birthday this year. _____

3. You will wake up with two noses. _____

Have the student explain why he or she chose the words.

4. Your favourite sports team will win its next game. _____

5. Spring will follow winter. _____

What other events are certain, likely, less likely, and impossible to happen?

With the student, brainstorm events and the chance of each happening. Ask which type of events are the most difficult to think of.

Use the "Answer Key to the Self-Marking Activities" to check your work.

Are you ready for your timed exercise? Ask your home instructor to time you for 2 minutes. Do as many questions as you can in 2 minutes. Write how many you completed.

Use the "Answer Key to the Self-Marking Activities" to check your work. Remember to record your scores here and on the Multiplication Facts Graph.

TIMED EXERCISE: 2 MINUTES

$7 \times 6 =$ _____ $3 \times 2 =$ _____ $7 \times 5 =$ _____ $5 \times 7 =$ _____ $2 \times 6 =$ _____ $3 \times 7 =$ _____ $4 \times 9 =$ _____

$1 \times 5 =$ _____ $8 \times 5 =$ _____ $5 \times 2 =$ _____ $7 \times 3 =$ _____ $3 \times 3 =$ _____ $8 \times 0 =$ _____

$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times 0 \\ \hline \end{array}$ $\begin{array}{r} 1 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$

$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$

Number completed	
Number correct	

EXTENSION ACTIVITIES

Do one or both of these activities.

Activity 1

Fold a sheet of paper in half. On one side print, "These are events that are certain to happen." On the other side print, "These are events that are impossible to happen." Draw or find pictures of each type of event and write a sentence about each of them.

Activity 2

Fold a sheet of paper in half. On one side print, "These are events that are likely to happen." On the other side print, "These are events that are unlikely to happen." Draw or find pictures of each type of event and write a sentence about each of them.

Submit your sentences and pictures to your teacher if you like.

Go to Assignment Booklet 7A.

DAY 13: SPINNER FUN

You used a spinner in Module 6 to create three-digit numbers. Have you ever played a game with a spinner or do you recall how to make a spinner? You're going to do both today.

Spinners can be fun for many games of chance!

SPINNER FUN

LESSON 1

Look at the following pictures. Think of the possible outcome for each. Write **impossible**, **unlikely**, **likely**, **uncertain**, or **certain** under each picture to describe that outcome.

1.

> I need a 9 to win.

_____

2.

> Can I throw it 1 kilometre away?

_____

3.

> I wonder if the Moon will be out tonight?

_____

4.

> I wonder if the Sun will rise tomorrow?

_____

Discuss spinners and how they are used in games.

Provide the student with the necessary materials and assist as needed.

To make the spinner, you or the student could place the Spinner Template from the Appendix on a sheet of paper, trace around it, and you may or may not choose to cut it out. Or you may have the student trace around a glass to make a circle. A ruler can be used to draw the sections required.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

You used a spinner in Module 6 to generate numbers. Where else are spinners used? Tell your home instructor.

You have probably seen a spinner on a board game. Spinners have several sections. What's usually true about the sections? Why do you think that is?

The sections on a spinner for a game are usually equal in size so the pointer has the same chance of landing on each section.

Now you will make your first game spinner! You will need the following:

- circle-shaped spinner
- paper clip
- pencil

- ruler
- crayons

The following instructions will help you.

How to Make and Use a Spinner
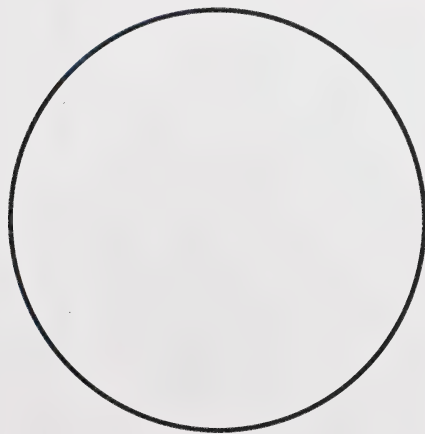
1. Use the Spinner Template from the Appendix to draw a spinner.

2. Mark the centre of the spinner and open a paper clip.
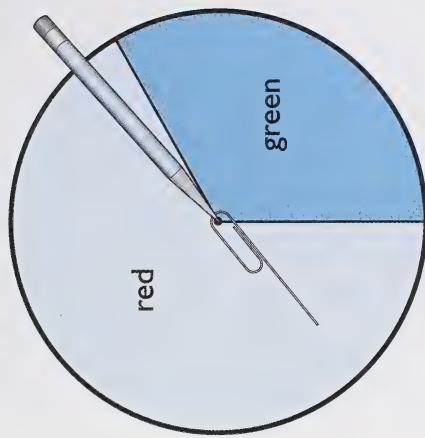
3. You will hold the clip in place by placing a pencil tip on the dot.

Now, it's time to make the sections.

Your first spinner will have two coloured sections. Make the sections so it is **more likely** that one colour comes up more often than the other colour. How do you think you can make it work that way? Did you say that one section would be larger than the other? Draw and colour the two sections. Make the bigger section red and the other green.

Your spinner should look similar to the spinner on this page.

LESSON 3

1. Predict which colour the spinner will land on more often. Why do you think so?

_____

After the student first draws the sections, check to make sure one section is not too much larger than the other. If the spinner is sure to land on one colour, the activity will not be fun.

Have the student write his or her prediction and explanation on the lines.

2. Predict how many times the spinner will land on each colour in 30 spins.

Green: _____   Red: _____

Spin the spinner 30 times to test your prediction. Keep a record of each spin with tally marks.

Outcome	Tally	Total
green		
red		
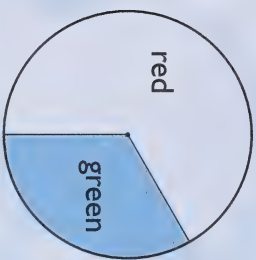
If the spinner is not giving the expected results, ask the student what the problem could be before pointing it out to him or her. The student may not be spinning fairly, one section may be much too large, or the two sections may be too close in size.

3. Find the total for each outcome. Check your prediction. How does it compare with the results?

_____

Discuss the results with the student's prediction.

SPINNER FUN

4. Look at these two spinners. Which spinner will land on blue more

often? Why? _____

I predict blue will be the result more often in Spinner B. Do you think I'm correct?
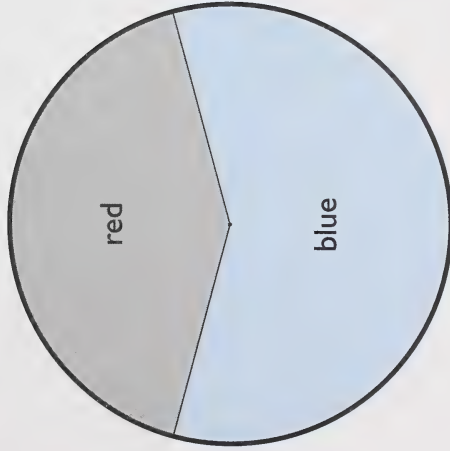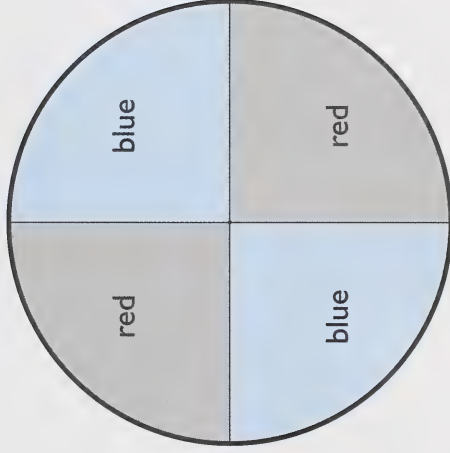
Spinner A

Spinner B

Use the "Answer Key to the Self-Marking Activities" to check your work.

Go to Assignment Booklet 7B.
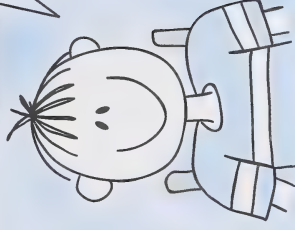
DAY 14: A DIFFERENT SPINNER

You made a spinner on Day 13. That spinner had two sections with two colours. Today, you will create and test a new spinner.

You will begin today's activities by seeing how a game of chance works. Are you ready to make some predictions?

A DIFFERENT SPINNER

LESSON 1

Now you will see for yourself how a game of chance works.

MATH BOX

Take out your interlocking cubes or use other coloured objects.

Place 15 red interlocking cubes and 5 blue ones in a bag.

What is the chance that you will pull out a red cube? Without looking, pull out one cube. What colour is it? Put the cube back in the bag and try again.

Now take out some red cubes so you only have 5 red ones and 5 blue ones. What is the chance that you will pull out a red cube? Without looking, pull out one cube. What colour is it? Put the cube back in the bag and try again.

Now take out all the red cubes so you have only 5 blue cubes in the bag. What is the chance that you will pull out a red cube? Without looking, pull out one cube. What colour is it? Put the cube back in the bag and try again.

Were the outcomes what you had predicted? Why or why not? Talk to your home instructor about the outcomes.

Have the student answer the questions orally. If you don't have 15 red cubes, use another colour. If the results are different from the predictions, explain that in predicting outcomes where chance is a factor, nothing is for certain. Ensure the bag is not see-through.
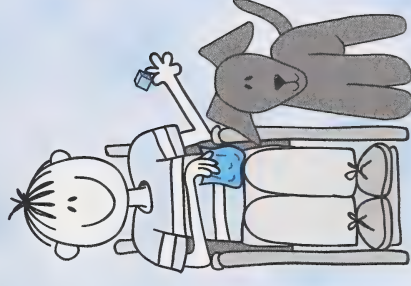
Read the following story aloud. Then fill in the circle beside the best answer for each of the questions.

Mandy went to the candy store to buy a variety of candies for herself and her friends. She bought 15 red candies and 5 blue candies and put them all in one bag.

When she came home, her brother Timmy put his hand in the bag and pulled out a candy.

1. What is the chance that the candy Timmy pulled out is red?
   ○ impossible
   ○ likely
   ○ less likely
   ○ certain

2. What is the chance that the candy Timmy pulled out is blue?
   ○ impossible
   ○ likely
   ○ less likely
   ○ certain

Mandy took out ten of the red candies. Now there were 5 red candies and 5 blue candies.

3. Now what is the chance that the candy Timmy pulled out is red?
   ○ impossible
   ○ uncertain
   ○ certain

A DIFFERENT SPINNER

4. What is the chance that the candy Timmy pulled out is blue?
   - ○ impossible
   - ○ uncertain
   - ○ certain

Mandy took out all the red candies. There were 5 blue candies in the bag.

5. Now what is the chance that the candy Timmy pulled out is red?
   - ○ impossible
   - ○ likely
   - ○ less likely
   - ○ certain

6. What is the chance that the candy Timmy pulled out is blue?
   - ○ impossible
   - ○ likely
   - ○ less likely
   - ○ certain
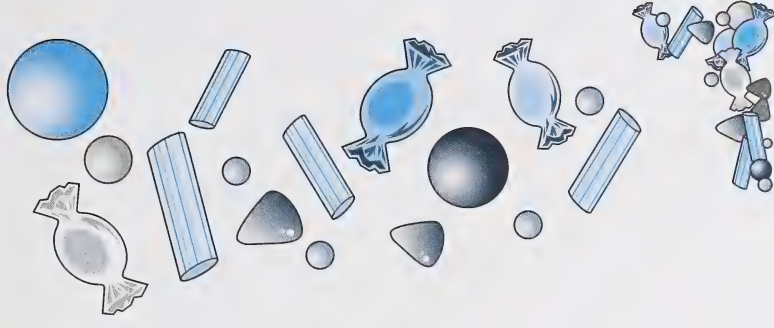
ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

On Day 13 you made a spinner that was more likely to come up one colour than the other.

Make a new spinner by tracing the Spinner Template on a sheet of paper. Your new spinner will have two sections with two colours but this time make the spinner so one colour is **as likely** to come up as the other. How can you do that?

Did you say that each section should be equal? Colour one section purple and the other one yellow.
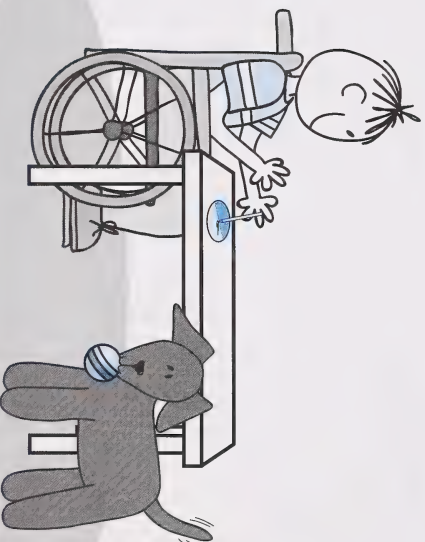
The student may choose to cut out the spinner or not. Discuss with the student that the two sections should be of equal size. Ensure the spinner has two equal sections. Explain the term *as likely* (has an equal chance) if the student has trouble understanding it.

A line drawn through the centre dot and touching the outer edge of the circle will give equal sections.

A DIFFERENT SPINNER

1. Predict what you think might happen when you spin the spinner.

_____

_____

2. Why do you think so? _____

_____

3. Predict how many times each colour will come up in 30 spins.

Purple: _____   Yellow: _____

Spin the spinner 30 times to test your prediction. Keep a record of each spin with tally marks and then complete the Total column.

Outcome	Tally	Total
purple		
yellow		

That didn't work quite the way I expected! Sometimes it is very surprising when working with chance.
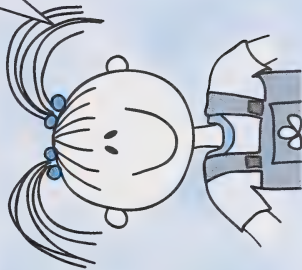
Discuss the results with the student's prediction and ask why the spinner landed on each colour almost equally.

4. Check your prediction. How does it compare with the results?

_____

5. Were you surprised with the results? Why or why not?

_____

_____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

ASSIGNMENT BOOKLET

Go to Assignment Booklet 7B.
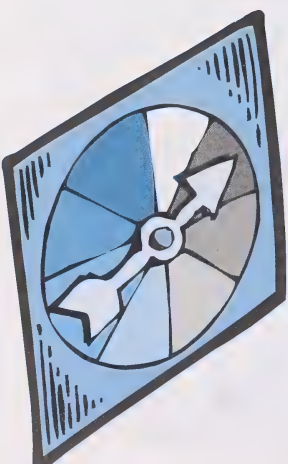
DAY 15: EXPERIMENTING WITH SPINNERS

People are always experimenting with new things! Experimenting is to try something new to see what happens. Sometimes we like to experiment just for fun. Have you or someone you know ever experimented by taking a hot-air balloon ride?

Today, you'll be experimenting with a variety of spinners.

Are you ready for even more spinners?

LESSON 1

On Days 13 and 14 you made spinners that had two sections with two colours. Today you will make spinners with more sections. You will still use only two colours. It will be interesting to see the results!

Look at the spinner below.

Red and blue each cover two sections. The sections are equal so red and blue have an equal chance for the spinner to land.

You may need to explain that even though the spinner has four sections the colours red and blue each cover the same amount of space on the spinner.
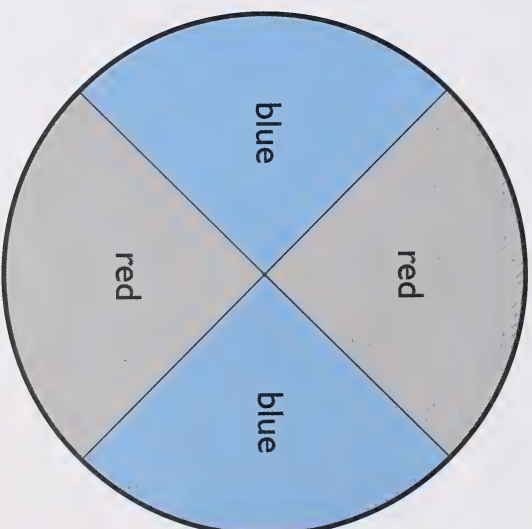
1. How many sections are on this spinner? _____

2. How many colours are on this spinner? _____

EXPERIMENTING WITH SPINNERS

3. Which colour will the spinner land on most often? How do you know?

_____

Now you will make two new spinners by tracing your Spinner Template from the Appendix. On your spinners you will still use only two colours, but this time you will make each with more than two sections. How can you make a spinner with more than two sections where one colour is just **as likely** to occur as the other?

Now make your second spinner using only two colours and a different number of sections from your first one. Be sure that each colour is still **as likely** to occur.

Brainstorm how this can be done: the spinners can be divided equally into four, six, or eight sections, with half the sections one colour and the other half a different colour. The student may choose to cut out the spinners or not.

You may find a protractor helpful in drawing many equal sections. You could also fold a circle and use the fold lines as a guide for section lines.

Have the student write his or her
prediction and explanation on the lines.

So far my predictions have
been pretty accurate.
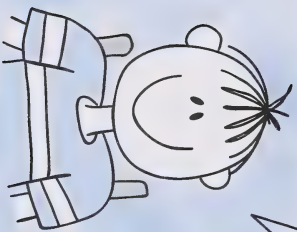
4. Predict what you think might happen when you spin the first spinner.

_____

_____

5. Why do you think so? _____

_____

Spin the first spinner 30 times to test your prediction. Keep a record of each
spin with tally marks on a separate sheet of paper.

6. Predict what you think might happen when you spin the second spinner.

_____

_____

7. Why do you think so? _____

_____

Spin the second spinner 30 times to test your prediction. Keep a record of
each spin with tally marks on a separate sheet of paper.

EXPERIMENTING WITH SPINNERS

8. Did your spinners work the way you predicted? Explain why.

_____

_____

Discuss the results with the student's prediction and ask why the spinner landed on each colour almost equally. (The colours cover the same area and are the same size, so both have equal chances of coming up.)

9. Does the number of sections of the spinners make it more likely for one colour to occur as the other? Why or why not?

_____

_____
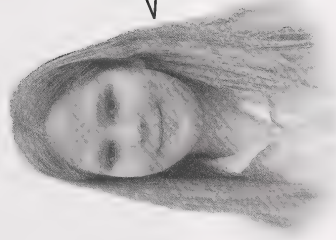
If the amount of space covered by a colour on a spinner is the same as the amount of space covered by another colour, both colours have an equal chance of coming up no matter how many sections there are.

LESSON 2

You will now make a spinner that has three sections with three colours. How can you make the spinner so that the chances for getting each colour are **equally likely**? Make the spinner by tracing your Spinner Template on paper. Use three different colours.

1. Predict what you think might happen when you use this spinner.

_____

Discuss how the circle will need to be divided into three equal sections.

Use a protractor or fold a separate cut-out circle to get three equal sections.

EXPERIMENTING WITH SPINNERS

2. Why do you think so? _____

_____

Spin the spinner 30 times to test your prediction. Keep a record of each spin with tally marks on a separate sheet of paper. _____

3. Did the spinner work the way you predicted? Explain why. _____

_____

Discuss the results with the student's prediction and ask why the spinner landed on each colour almost equally. (Each colour covers the same area and each is the same size so each has an equal chance of coming up.)

Now make a spinner with three sections and three colours where the chances for getting one of the colours is **unlikely**. How can you do that? _____

4. Predict what you think might happen. _____

_____

5. Why do you think so? _____

_____

Spin the spinner 30 times to test your prediction. Keep a record of each spin with tally marks on a separate sheet of paper. _____

Discuss how this can be done. Make one of the sections much smaller than the other two. The other two can be equal to each other or not.

Discuss the results with the student's prediction and ask why the spinner landed on the smallest section least often. Discuss that the smallest section covers the smallest area so the chances of landing on it is less likely.

Discuss the different spinners the student made today, including the decisions he or she made while creating them. Ask what methods the student used to predict the outcomes of the spinner, and to make a generalization about spinners and their outcomes.

6. Did the spinner work the way you predicted? Explain why or why not.

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.
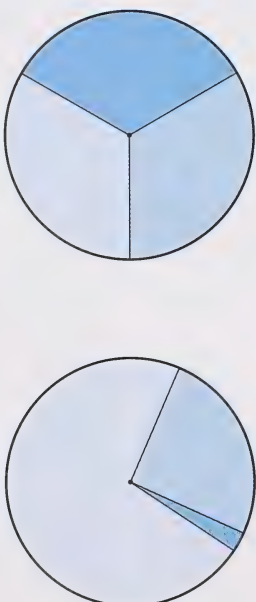
Were you surprised with any of the results with the spinners you worked on today? Tell your home instructor why or why not.

Tell your home instructor what you know about spinners now.

Are you ready for your timed exercise? Ask your home instructor to time you for 2 minutes. Do as many questions as you can.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work. Remember to record your scores here and on the Multiplication Facts Graph.

EXPERIMENTING WITH SPINNERS

TIMED EXERCISE: 2 MINUTES

$3 \times 5 =$ _____ $8 \times 5 =$ _____ $5 \times 3 =$ _____ $4 \times 8 =$ _____ $9 \times 4 =$ _____ $1 \times 1 =$ _____ $8 \times 0 =$ _____

$1 \times 9 =$ _____ $6 \times 5 =$ _____ $6 \times 6 =$ _____ $3 \times 8 =$ _____ $7 \times 7 =$ _____ $5 \times 9 =$ _____

$$\begin{array}{r} 1 \\ \times 2 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ \times 3 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ \times 6 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ \times 8 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ \times 6 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times 7 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times 8 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times 1 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times 0 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$$

Number completed	
Number correct	

Go to Assignment Booklet 7B.

ASSIGNMENT BOOKLET

DAY 16: MORE SPINNER FUN

There are many combinations of colours and styles in clothing. You can also make many different combinations of spinners. The number and size of spaces and the colours can vary. You'll try many combinations today.

MORE SPINNER FUN
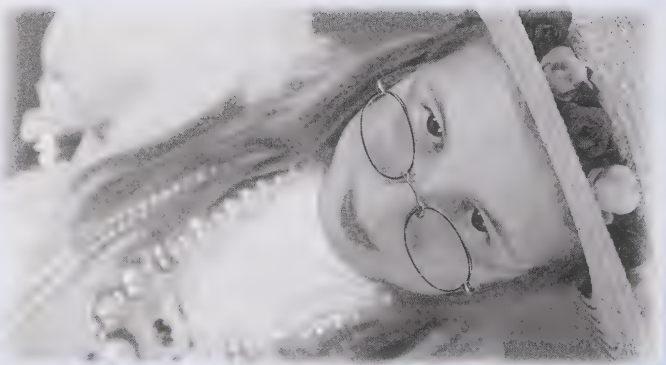
LESSON 1

Try this review exercise first. Imagine the following line represents the range of events from those that are impossible to ones that are certain.

Identify where on the line each of the following cards would belong. Write the letter of the card where it belongs on the line.

Impossible ──────────────────── **Certain**

a. You will read a story about an animal this week.

b. You will eat dinner tonight.

c. Humans will travel to Mars some day.

d. You will grow 1 metre this year.

e. It will rain every second day of the year.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

You will review probability with these exercises. Explain how the line works. The events are to be listed from *impossible* to *less likely*, to *likely*, to *certain*. Have the student self-check the answers. Discuss why the student chose to place the events where he or she did.

LESSON 2

You have made a number of spinners so far. Now try this one. It will have five sections with five different colours. Make it so the chance of getting one of the colours is **more likely** to occur. How can you do that?

1. Predict what you think might happen. _____

2. Why do you think so? _____

After you make the spinner, spin the paper clip 30 times to test your prediction. Keep a record of each spin with tally marks on a separate sheet of paper.

3. Did the spinner work the way you predicted? Explain why. _____
_____
_____

Discuss with your student how this can be done. Make one of the sections much larger than the other four. The size of each of the other four sections doesn't matter.

Discuss the results with the student's prediction and ask why the spinner landed on the biggest section most often. Elicit that the biggest section covers the largest area so the chance of it coming up is more likely.

MORE SPINNER FUN

Look carefully at the spinner on this page. Fill in the circle beside the correct answer for the following question.

4. Which result do you think is more likely to occur in 40 spins?

○ land on moons 10 times, stars 10 times, and suns 20 times
○ land on moons 10 times, stars 20 times, and suns 10 times

5. Is the spinner most likely to land on **moons**, **stars**, or **suns**? _____

_____

6. Predict where the pointer is less likely to land? _____

_____

Test your predictions. Spin 40 times. Keep a record of each spin with tally marks on a separate sheet of paper.

Discuss the results with the student's prediction and ask why the spinner landed on the stars most often (The stars cover the largest area so the chances of coming up are more likely.)

7. Did the spinner work the way you predicted? Explain why or why not.

_____

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 3

You have worked with a number of various spinners. It's now time to review what you know.

STUDENT FOLDER
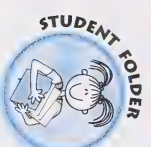
Take out some unlined paper.

Trace around a glass or use your Spinner Template to draw the spinners and use a ruler to draw the lines for the sections in each circle.

Read the following instructions to make the sections on your spinners. A ruler will help you to draw straight lines.

MORE SPINNER FUN

1. Draw a spinner where the chances are **impossible** to land on red.

2. Draw a spinner where the chances are **certain** to land on red.

3. Draw a spinner where it is **likely** green will be landed on most often.

4. Draw a spinner where it is **less likely** that the spinner will land on green.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

EXTENSION ACTIVITIES

Use your own paper to make these spinners. Trace around a glass to draw the spinners and use a ruler to draw the lines in each circle. You do not have to cut out the spinners.

- The spinner is more likely to stop on purple than pink.
- The spinner will probably stop on all four colours the same number of times.
- The spinner will stop on yellow as often as it stops on green.
- The spinner will stop on blue more often than red.
- The spinner has four colours.
- The spinner has five colours.

Submit your spinners to your teacher if you like.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

ASSIGNMENT BOOKLET

Go to Assignment Booklet 7B.

DAY 17: DIFFERENT OUTCOMES

Do you and family or friends play board games or card games? Does the same person always win? Do you have the same chance as anyone else of winning in each game?

There are always different outcomes for an event or a game. You'll explore these today by flipping, tossing, and spinning.

LESSON 1

When you play a game of chance, can you know the outcome?

When you made the spinners in the last few days, you discovered that some outcomes **can** be predicted quite accurately.

On Day 11, you flipped a coin, pulled a card out of a deck, and rolled a number cube. You found out that some outcomes **cannot** be predicted—you have to experiment to find out the outcomes.

1. Look at Luke flipping the coin. Can you predict whether the coin will land on heads or tails? You won't know for sure until he tries it.

   How many possible outcomes are there? _____

2. One of two things can happen. What are the possible outcomes?
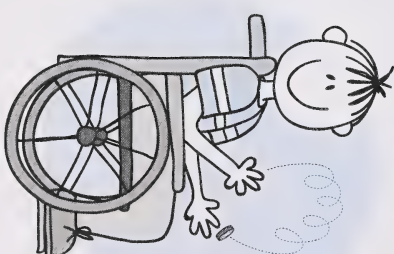
_____

_____

DIFFERENT OUTCOMES

3. Is the chance of Luke flipping heads the same as the chance of flipping tails?

_____

4. Are the outcomes equally likely? _____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

LESSON 2

In this lesson, you will experiment to find out possible outcomes for objects that are flipped, tossed, and spun. You will also find out which outcomes are equally likely. You will toss a coin, flip a number cube, and spin a spinner.

MATH BOX

Gather a coin, the number cube (from the Appendix or the one you made on Day 11), and a spinner with four equal sections and two colours.

Check the spinners you have already made to see if you have a spinner with four equal sections. (You might have made one on Day 15.) If you do not have a spinner like this, use your own paper to make a spinner with four equal sections. Colour two sections one colour and the other two sections another colour.

Instructions

Complete your experiments by following these instructions:

- Record the possible outcomes and your predicted outcomes on each of the outcomes charts.

- Do the coin flip, number-cube toss, and spinner twirls 20 times each.

- Keep a record for each toss, flip, and spin by making tally marks in the appropriate column.

- Record the totals for each outcome.

Coin Flip

Possible Outcomes	Predicted Outcomes (not likely to be equal, equally likely, more likely)	Tally	Total for Each Outcome

Assist the student as needed. The possible outcomes are heads or tails.

DIFFERENT OUTCOMES

The possible outcomes are 1, 2, 3, 4, 5, or 6.

Number Cube Toss

Possible Outcomes	Predicted Outcomes (not likely to be equal, equally likely, more likely)	Tally	Total for Each Outcome

150

The possible outcomes are the two colours on the spinner.

Spinner Twirls

Possible Outcomes	Predicted Outcomes (not likely to be equal, equally likely, more likely)	Tally	Total for Each Outcome

1. Were your predictions accurate? _____

2. a. Was it easy or difficult to make the predictions? _____

b. Why do you think so? _____

3. What can you conclude from these experiments? _____

Discuss the experiments with the student. Have the student first answer the questions orally. Elicit that some outcomes can be predicted. (The outcomes for the coin toss and spinner are equally likely because there are only two possible outcomes.) You must experiment to find out other outcomes as with the number cube where there are six possible outcomes. If the student is experiencing difficulty with the concept, repeat the experiments using a separate piece of paper. The results should be similar.

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

EXTENSION ACTIVITIES

Play the "Odd or Even" game with your home instructor.

You will need two number cubes or dice, a pencil, and some paper.

Odd or Even

Follow these instructions:

- One player is the Odd player. The other player is the Even player.

- Take turns with your home instructor rolling the two number cubes.

- Add the two numbers on the cubes.

- The Even player gets a point if the sum of the numbers on the cubes is even. The Odd player gets a point if the sum is odd.

- Play until one person has 30 points.

- Play the game again. This time, the Even player becomes the Odd player, and the Odd player becomes the Even player.
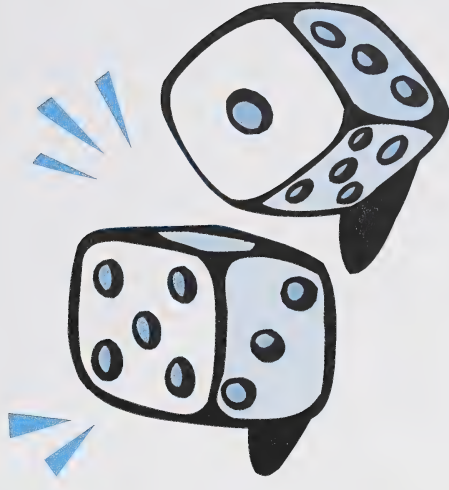
You may want to have your student make a chart of all the combinations possible and then sort the totals into odd and even columns.

1. What is the highest possible odd sum you could get on one roll of the cubes? _____

2. What is the highest possible even sum you could get on one roll of the cubes? _____

3. Why would you want to allow each person to be an Odd and Even player?

_____

ANSWER KEY

Use the "Answer Key to the Self-Marking Activities" to check your work.

ASSIGNMENT BOOKLET

There is no assignment in your Assignment Booklet today.

DAY 18: LOOKING BACK

Today, you will show your teacher what you have learned about data analysis and chance by completing some review questions in your Assignment Booklet. You may want to look back through your Student Module Booklet if you have difficulty with any of the questions.

You will also do a Multiplication Number Facts exercise to send to your teacher. Remember to fill out the Student's Checklist and Student's Comments about the module.

Go to Assignment Booklet 7B. When you have completed the assignments for Day 18, read the e-mail that Luke sent Sarah, and recall all you have learned in this module. Finally, complete the Student's Checklist and Student's Comments before you submit your work to the teacher.

File Edit View Insert Format Tools Help

X

Send Mail ✉

To...   sarah@e-mail.net

Cc...

Subject...   Data and Chance

Hi Sarah,

I had fun doing Module 7. My favourite part was taking surveys. What did you like best? Now I know how to

- collect data using surveys and tally charts

- make predictions about data and rank order it

- show data in more than one way

- describe outcomes using terms such as likely, unlikely, less likely, impossible, certain, and uncertain

- conduct a probability experiment, record the results, and draw conclusions from it

We can play some games of chance when I come to visit.

Luke

APPENDIX

GLOSSARY
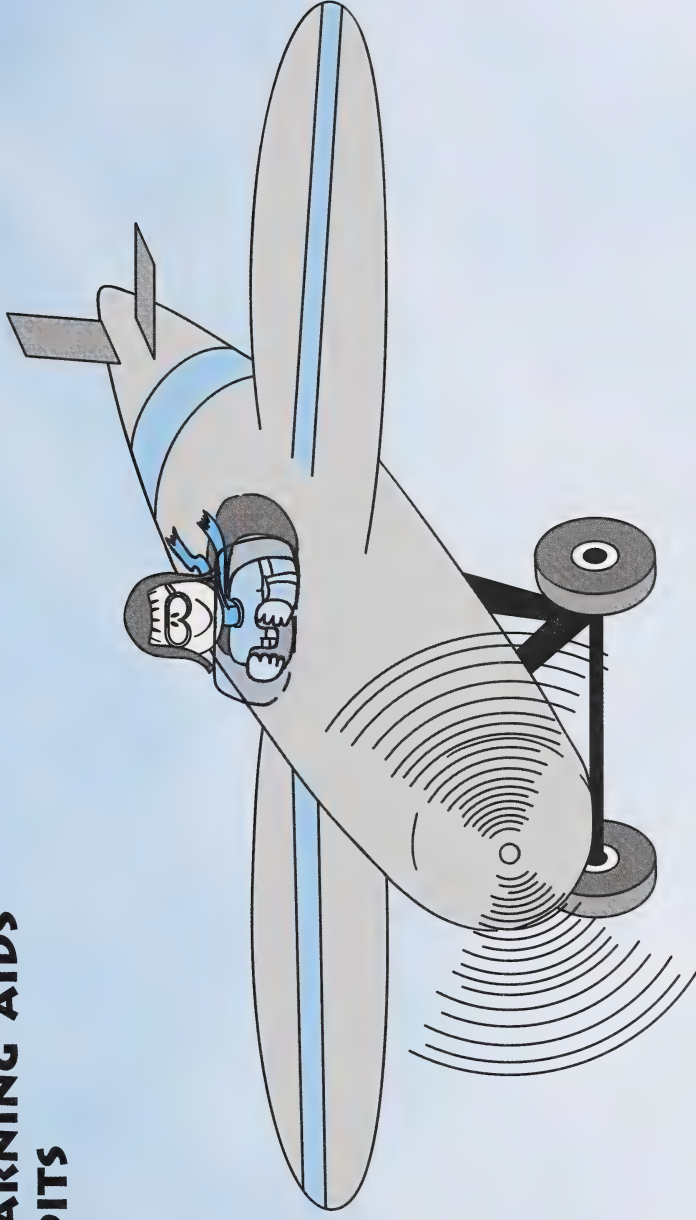
as likely: equally expected to happen

bar graph: a graph that shows data or information by using coloured bars

certain: sure to happen

chance: the possibility of something happening

data: information

graph: a type of chart that shows information by using bars or rows of pictures to stand for different items and amounts

impossible: cannot happen

likely: probably will happen or expected to happen

outcome: how something turns out, a result

pictograph: a graph that shows data or information by using pictures or symbols

prediction: a guess, often based on some data

probably: likely or expected to happen

rank: to arrange in order according to some measure such as importance, position, or amount

survey: collecting data or gathering information by making a study or interviewing people

tally marks: short lines you make each time you count

When you reach 5, the fifth tally mark crosses the lines.

卌 shows 5

uncertain: not sure to happen; unknown if likely or not

unlikely: probably won't happen or not expected

ANSWER KEY TO THE SELF-MARKING ACTIVITIES

DAY 1: LESSON 1

1. There are five different colours of hair.

2. Most family members have brown hair.

3. More family members have blond hair. Two members have blond hair. Only one family member has red hair.

4. Sarah collected data from 12 family members.

DAY 1: LESSON 2

1. You could collect data about many things by looking at the picture. You could get data about different types of hair or clothes, tall and short people, males and females or number of children and adults.

2. The pictograph shows the number of tall and short people in Sarah and Luke's families.

3. a. There are more tall people.

   b. No, you do not have to count each figure in the graph. A graph shows data in a clear way. It can give you information at a glance.

4. There are seven tall people. There are five short members.

5. Your graph may be different. It may show different data, and you may have used different symbols. This is an example of a pictograph showing the number of females and males in Sarah and Luke's family.

Females and Males

Females	👤 👤 👤 👤 👤 👤
Males	👤 👤 👤 👤 👤 👤

6. Your graph may show different data. The sample pictograph shows the number of females and males in Sarah and Luke's families. There are six females and six males in the family.

7. Your questions may be different. You may have shown different data on your graph. These are sample questions for the given graph:

- How many females are there in the family?
- How many males are in the family?

There are no suggested answers for the Extension Activities.

1. You may have used minutes or hours to find the amount of time Charlie and Sarah spent on each activity.

Charlie's Schedule

Time	Activity	Amount of Time
7:00 to 8:00	get up and get ready for the day	60 minutes or 1 hour
8:00 to 8:30	breakfast	30 minutes or $\frac{1}{2}$ hour
8:30 to 9:00	on school bus	30 minutes or $\frac{1}{2}$ hour
9:00 to 12:00	school	3 hours
12:00 to 1:00	lunch	60 minutes or 1 hour
1:00 to 3:30	school	2 hours and 30 minutes or $2\frac{1}{2}$ hours
3:30 to 4:00	on school bus	30 minutes or $\frac{1}{2}$ hour
4:00 to 5:30	playtime	1 hour and 30 minutes or $1\frac{1}{2}$ hours
5:30 to 6:30	supper	60 minutes or 1 hour
6:30 to 9:00	watch TV	2 hours and 30 minutes or $2\frac{1}{2}$ hours
9:00	bedtime and sleep (9:00 P.M. to 7:00 A.M.)	10 hours

Sarah's Schedule

Time	Activity	Amount of Time
8:00 to 8:30	get up and get ready for the day	30 minutes or $\frac{1}{2}$ hour
8:30 to 9:00	breakfast	30 minutes or $\frac{1}{2}$ hour
9:00 to 12:00	school at home	3 hours
12:00 to 1:00	lunch	60 minutes or 1 hour
1:00 to 3:30	school	2 hours and 30 minutes or $2\frac{1}{2}$ hours
3:30 to 5:00	help with chores on farm	90 minutes or $1\frac{1}{2}$ hours
5:00 to 5:30	piano lesson or practice	30 minutes or $\frac{1}{2}$ hour
5:30 to 6:00	playtime	30 minutes or $\frac{1}{2}$ hour
6:00 to 7:00	supper	60 minutes or 1 hour
7:00 to 8:00	playtime	60 minutes or 1 hour
8:00 to 8:30	watch TV	30 minutes or $\frac{1}{2}$ hour
8:30 to 9:00	read	30 minutes or $\frac{1}{2}$ hour
9:00	bedtime and sleep (9:00 P.M. to 8:00 A.M.)	11 hours

2. a. Charlie slept from 9:00 P.M. to 7:00 A.M. He slept for 10 hours.
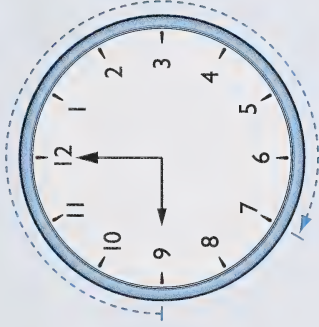
b. Sara slept from 9:00 P.M. to 8:00 A.M. She slept for 11 hours.

DAY 2: LESSON 2

1. a. Activities that Charlie could say are "other" activities are being on the school bus and getting ready for the day.

   b. Charlie spent these times on other activities:

getting ready for the day	60 minutes	or	1 hour
on school bus (in the morning)	30 minutes	or	$\frac{1}{2}$ hour
on school bus (in the afternoon)	30 minutes	or	$\frac{1}{2}$ hour
	120 minutes	or	2 hours

   Charlie spent 2 hours on other activities.

2. a. Activities that Sarah could say are "other" activities are getting ready for the day, doing chores, piano lessons or practice, and reading.

   b. Sarah spent these times on other activities:

getting ready for the day	30 minutes	or	$\frac{1}{2}$ hour
doing chores	90 minutes	or	$1\frac{1}{2}$ hour
piano lessons or practice	30 minutes	or	$\frac{1}{2}$ hour
reading	30 minutes	or	$\frac{1}{2}$ hour
	180 minutes	or	3 hours

   Sarah spent 3 hours on other activities.

3. Both of them spend the most time sleeping.

4. Charlie watches more TV. He watches TV for $2\frac{1}{2}$ hours each weekday. Sarah watches TV for $\frac{1}{2}$ hour each weekday.

5. Sarah spends more time sleeping. She sleeps 11 hours each weekday. Charlie sleeps 10 hours each weekday.

6. Charlie and Sarah spend the same amount of time eating, at school, and playing.

7. The graphs show that Charlie spends more time than Sarah watching TV. They spend the same amount of time playing. Sarah spends more time than Charlie on other activities.

DAY 2: LESSON 3

1. Your schedule should look similar to Sarah's and Charlie's schedules. Estimate the times you do different activities. Find out how much time you spend on different activities.

2. You may use these questions to help check your work:

- Did you combine any activities?
- Did you remember to find the total amount of time if you combined activities?
- Did you label your columns? Did you colour in the columns the correct amount?
- Did you check your graph carefully? Do your times add up to 24 hours?

DAY 3: LESSON 1 AND LESSON 2

3. Your conclusions may be different. These are examples:

- I spend most of my time sleeping and going to school.
- I spend more time playing than watching TV.
- I spend the same amount of time reading as watching TV.

DAY 3: LESSON 1

1. Yes, Charlie ranked the activities correctly according to the time spent on each. The order for watching TV and eating could be exchanged. The times for these activities are the same.

2. Your answer might be similar to the following:

   I know because I looked at the height of the bars on his graph to see what order they go from most time to least time.

DAY 3: LESSON 2

1. No, the information is the same. The amount of time for each activity is the same in both graphs. The new graph makes it easier to see the order of the activities from most amount of time to least amount of time.

2. The graph to the right shows the data rank ordered from **least** amount of time to **most** amount of time. The bars are **vertical**.

3. The graph to the right shows the data rank ordered from **least** amount of time to **most** amount of time. The bars are **horizontal**.

4. a. The graphs are the same because they show the same information.

   b. They are different because these graphs rank order the activities in order from least amount of time to most. The other graphs do not rank order the data.

DAY 3: LESSON 3

You created a vertical bar graph and a horizontal bar graph. Your graphs should look similar to the graphs Charlie made in Lesson 2.

Timed Exercise Answers

$3 \times 6 = 18$ $5 \times 2 = 10$ $8 \times 2 = 16$ $7 \times 7 = 49$ $2 \times 6 = 12$ $5 \times 7 = 35$ $9 \times 1 = 9$

$6 \times 6 = 36$ $5 \times 5 = 25$ $4 \times 3 = 12$ $6 \times 8 = 48$ $3 \times 9 = 27$ $0 \times 9 = 0$

$$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array} \qquad \begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array} \qquad \begin{array}{r} 1 \\ \times 4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array} \qquad \begin{array}{r} 6 \\ \times 7 \\ \hline 42 \end{array} \qquad \begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array} \qquad \begin{array}{r} 5 \\ \times 6 \\ \hline 30 \end{array} \qquad \begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array} \qquad \begin{array}{r} 7 \\ \times 4 \\ \hline 28 \end{array} \qquad \begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array} \qquad \begin{array}{r} 2 \\ \times 9 \\ \hline 18 \end{array}$$

DAY 4: LESSON 1

1. Your tally chart should look like this.

Vegetable	Number Sold	Total
potatoes	‖‖ ‖	7
tomatoes	‖‖ ‖‖ ‖	11
peas	‖‖ ‖‖ ‖‖ ‖‖	18
cucumbers	‖	3
beets	‖‖	4
carrots	‖‖ ‖‖	8

2. The number of baskets of vegetables sold, rank ordered from least to most is cucumbers, beets, potatoes, carrots, tomatoes, peas.

3. A pictograph is a graph that shows data or information by using pictures or symbols.

4. These graphs are pictographs because they use pictures or symbols to show the data.

5. Here are examples of questions. Your questions may not be exactly the same.

- What information does the graph show?
- Which vegetable sold the most?
- Which vegetable sold the least?
- How many baskets of vegetables were sold in all?
- How many baskets of (carrots, beets, cucumbers, potatoes, tomatoes, or peas) were sold?

DAY 4: LESSON 2

1. In order from first to last, Ms. Rashid painted the house, fence, barn, and then the shed.
2. Your tally chart should look like this.

Flower	Tally	Total
roses	⧸⧸⧸⧸ ⧸⧸⧸⧸ ⧸⧸	12
lilies	⧸⧸⧸⧸ ⧸	6
carnations	⧸⧸⧸⧸ ⧸⧸⧸⧸	9
tulips	⧸⧸⧸⧸ ⧸⧸⧸⧸ ⧸⧸⧸	13
irises	⧸⧸⧸⧸	4
daffodils	⧸⧸⧸⧸ ⧸⧸⧸⧸ ⧸	11

3. From most-liked to least-liked, the flowers are tulips, roses, daffodils, carnations, lilies, and irises.

4. a. Compare your bar graph to the following. You may have picked a different title and labels. The order of the bars should be the same.

Favourite Flowers

Number
of
People

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

Flowers: Tulips, Roses, Daffodils, Carnations, Lilies, Irises
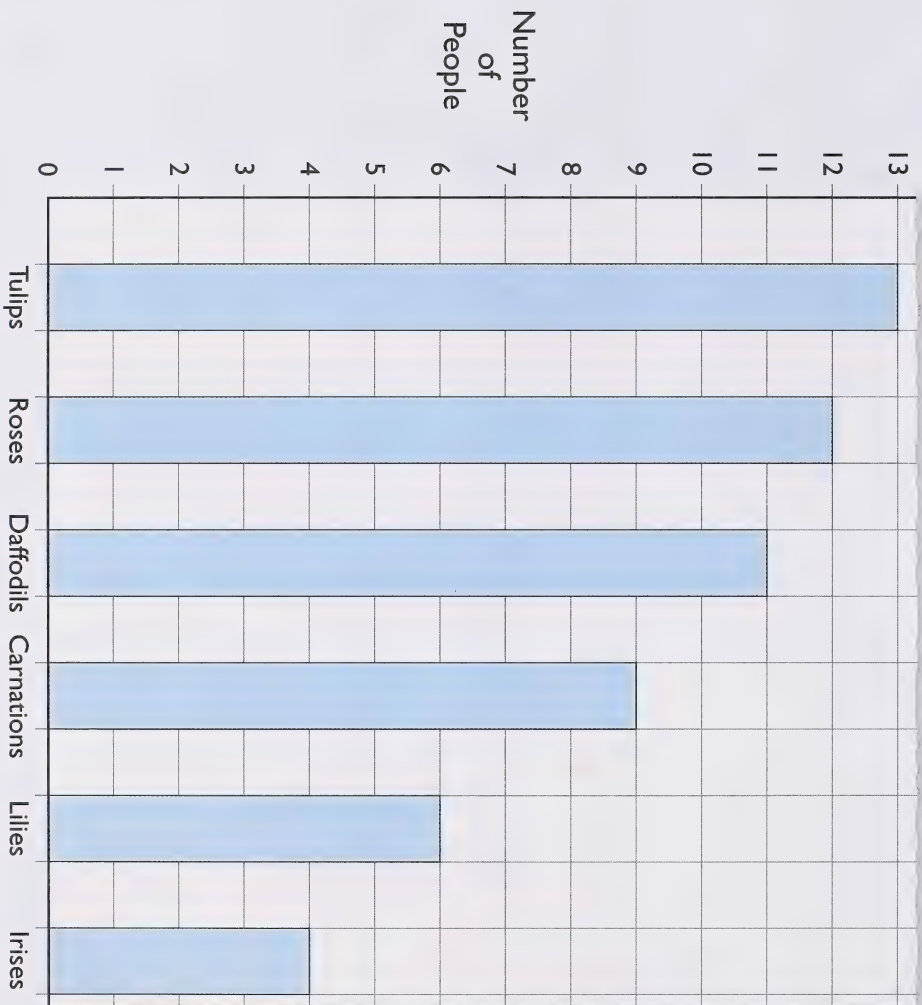
b. Compare your pictograph to the following. You may have picked a different title. The order of the bars should be the same. You may have chosen a different picture or symbol.

Favourite Flowers

Tulips	✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿
Roses	✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿
Daffodils	✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿ ✿
Carnations	✿ ✿ ✿ ✿ ✿ ✿ ✿
Lilies	✿ ✿ ✿ ✿ ✿
Irises	✿ ✿ ✿

✿ = 1 person

5. Your questions may be different. Here are some examples:

- What information does the graph give?
- Which flower is the most popular? The least popular?
- How many people were surveyed?
- How many people liked tulips the best?
- How many liked roses (daffodils . . .) best?

There is no suggested answer to the Extension Activities.
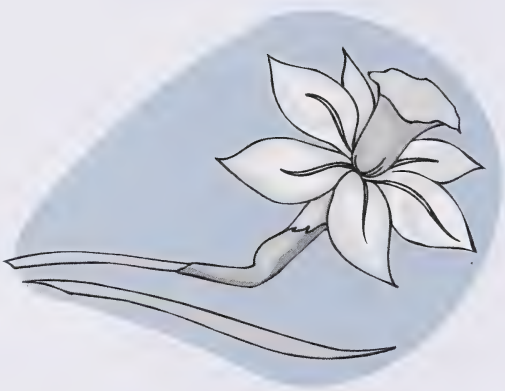
DAY 5: LESSON 1

1. Your tally chart should look like the following.

Shoe Size	Tally	Total
$2\frac{1}{2}$	/	1
3	//	2
$3\frac{1}{2}$	////	4
4	//// ///	8
$4\frac{1}{2}$	////	5
5	//	2
$5\frac{1}{2}$	/	1
6	/	1

2. Luke surveyed 24 children.

$1 + 2 + 4 + 8 + 5 + 2 + 1 + 1 = 24$

3. The most common shoe size is size 4.

4. The least common are sizes $2\frac{1}{2}$, $5\frac{1}{2}$, and 6.

5. Two children have a size-3 shoe.

6. You may have answered by saying the bar graph best shows the data. A bar graph is easier to read when there is a large amount of data to display.

You may have answered that the pictograph shows the data better. It is very easy to read.

7. Drawing one shoe for every two children makes it easier and faster. You have less drawing to do and you can count by twos. One-half of a shoe stands for one child.

DAY 5: LESSON 2

1. Your tally chart should look like the following one.

Movie Type	Tally	Total
scary	++++ ///	8
fantasy	++++ ++++ ++++ //	17
dinosaur	//	2
science fiction	++++ ++++ ////	14
adventure	++++ ++++	10

2. 8 + 17 + 2 + 14 + 10 = 51.

   Luke surveyed 51 children.

3. The favourite type of movie is fantasy.

4. The least-favourite movie type is dinosaur.

5. The second-favourite type of movie was science fiction. Fourteen children liked this kind of movie.

6. There were 37 children who did not like the second-favourite type of movie.

   51 – 14 = 37

7. The answers to questions 5 and 6 add up to the total number of children surveyed (51).

8. Compare your bar graph with the following. You may have a different title and labels.

Favourite Types of Movies

Types of Movie	Number of Children
Scary	(bar to 8)
Fantasy	(bar to 17)
Dinosaur	(bar to 2)
Science Fiction	(bar to 14)
Adventure	(bar to 10)

Number of Children: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
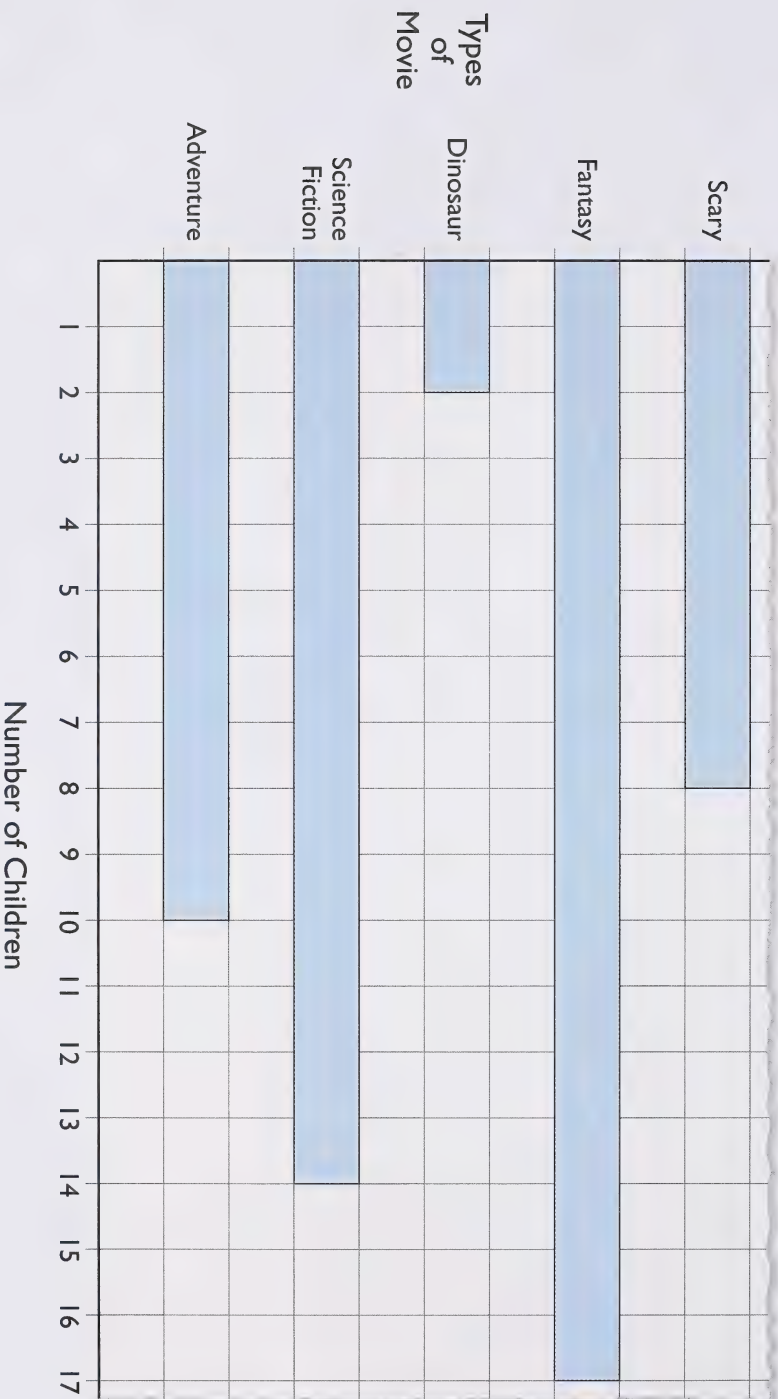
9. Compare your pictograph with the one following. You may have a different title and labels. You may have chosen a different picture or symbol to represent every two students.

Student's Favourite Types of Movies

Scary	🧍🧍🧍
Fantasy	🧍🧍🧍🧍🧍🧍
Dinosaur	🧍
Science Fiction	🧍🧍🧍🧍
Adventure	🧍🧍🧍

🧍 = 2 students

10. a. Both graphs show the same data.

b. The first graph is a bar graph and the second graph is a pictograph. Each square in the bar graph stands for one person. Each symbol in the pictograph stands for two people.

There are no suggested answers to the Extension Activities.

DAY 6

1. Your tally chart should look as follows.

Response to Question	Tally	Total
Yes	ⵜⵜ ⵜⵜ ⵜⵜ /	16
No	ⵜⵜ ////	9

2. Luke surveyed 25 children.

    $16 + 9 = 25$

3. There were 7 more children who said yes than no.

    $16 - 9 = 7$

4. a. YES: 32 $16 + 16 = 32$ or $16 \times 2 = 32$ NO: 18 $9 + 9 = 18$ or $9 \times 2 = 18$

    b. You should have doubled the number of yes and no answers.

5. Luke predicted that more students would say yes. Yes, his prediction was correct.

Timed Exercise Answers

$6 \times 6 = 36$ $5 \times 2 = 10$ $8 \times 5 = 40$ $7 \times 5 = 35$ $2 \times 0 = 0$ $3 \times 7 = 21$ $4 \times 3 = 12$

$9 \times 2 = 18$ $5 \times 6 = 30$ $8 \times 3 = 24$ $4 \times 2 = 8$ $6 \times 3 = 18$ $3 \times 3 = 9$

$$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array} \qquad \begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array} \qquad \begin{array}{r} 7 \\ \times 7 \\ \hline 49 \end{array} \qquad \begin{array}{r} 4 \\ \times 5 \\ \hline 20 \end{array} \qquad \begin{array}{r} 2 \\ \times 8 \\ \hline 16 \end{array} \qquad \begin{array}{r} 5 \\ \times 2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 8 \\ \times 6 \\ \hline 48 \end{array} \qquad \begin{array}{r} 3 \\ \times 8 \\ \hline 24 \end{array} \qquad \begin{array}{r} 5 \\ \times 1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array} \qquad \begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array} \qquad \begin{array}{r} 9 \\ \times 3 \\ \hline 27 \end{array}$$

DAY 7: LESSON 1

1. It takes Juan the longest time.

2. Rena takes the shortest time.

3. It takes Dana exactly one-half the time that it takes Marek.

4. Juan spends more than twice as much time as Marek getting to and from school.

5. The number of minutes to get to and from school each day, from least to greatest, is as follows:

15, 20, 40, 75, 90

6.

Time Getting to and from School

Name

Number of Minutes
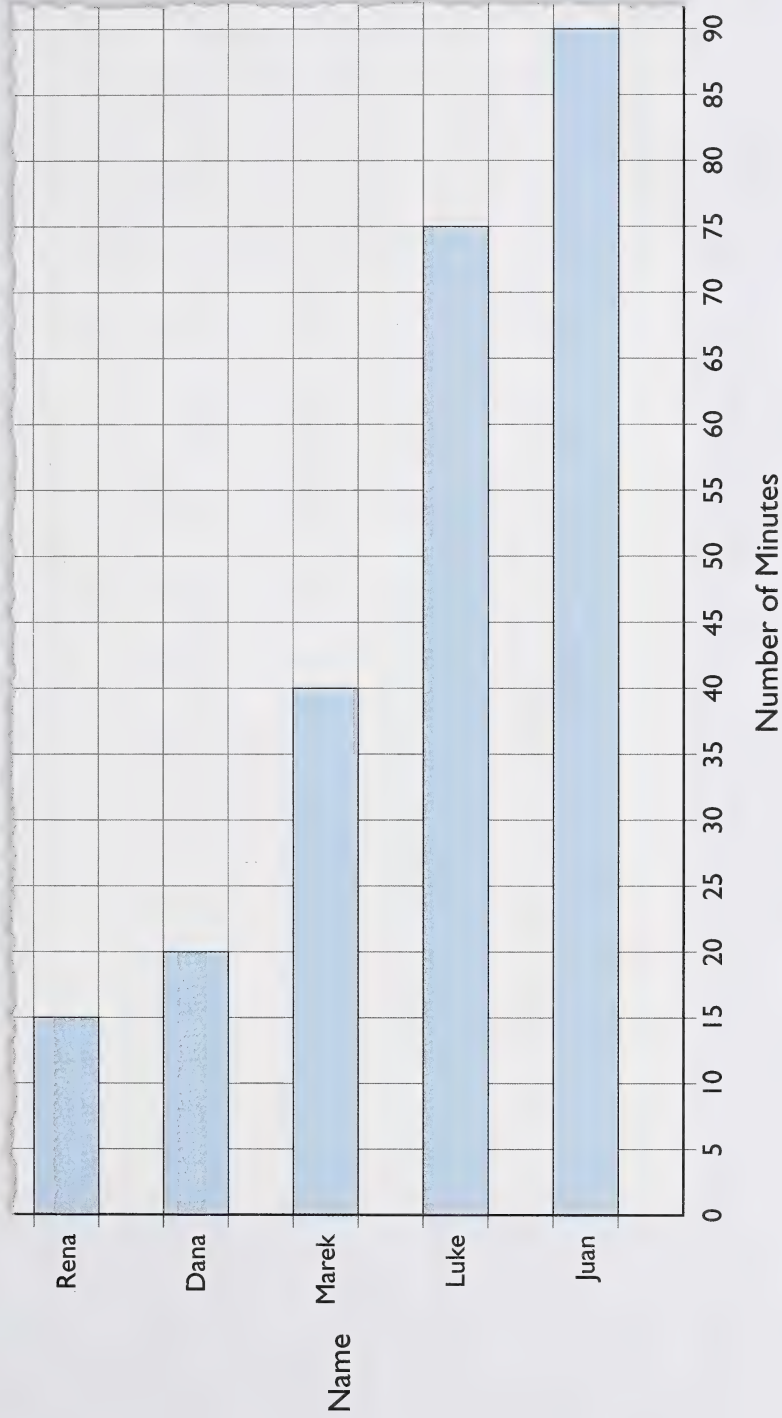
DAY 7: LESSON 2 AND LESSON 3

DAY 7: LESSON 2

1. Mr. Shaw watches 24 hours of TV per week.

   $4 + 5 + 3 + 3 + 3 + 3 + 3 = 24$

2. As there are usually 4 weeks in one month, Sarah can add the number of hours her uncle watches in a week four times $(24 + 24 + 24 + 24)$ or she can multiply the number of hours her uncle watches in one week by four. (4×24)

3. Mr. Shaw watches 96 hours of TV in a month.

   $24 + 24 + 24 + 24 = 96$ or $4 \times 24 = 96$

4. Mr. Shaw watches 96 hours or about 100 hours of TV in one month. There are 12 months in a year.

   $100 \times 12 = 1200$

   Mr. Shaw watches about 1200 hours of TV in a year.

DAY 7: LESSON 3

Your selected two questions that you could use to survey people. If you need extra help with this assignment, contact your teacher.

There are no suggested answers for the Extension Activities.

DAY 8: LESSON 1

1. Sand castles take the most time.

2. The warm-up exercises take the least amount of time.

3. Lunch is 1 hour long—from 12:00 to 1:00.

4. The relay races start at 10:00.

5. The board games end at 11:00.

DAY 8: LESSON 2

1. In one day the families travelled 369 kilometres in all.

   $60 + 48 + 16 + 85 + 50 + 110 = 369$

2. Buffy's family travelled the least distance.

3. Phil's family travelled the greatest distance.

4. Rena's: $60 \times 7 = 420$ km   Shannon's: $85 \times 7 = 595$ km
   Geoffrey's: $48 \times 7 = 336$ km   Guy's: $50 \times 7 = 350$ km
   Buffy's: $16 \times 7 = 112$ km   Phil's: $110 \times 7 = 770$ km

Did you remember to write km? Did you show each number equation?

DAY 8: LESSON 2 AND DAY 9

5. The distance travelled by the families, rank ordered from greatest to least, is Phil, Shannon, Rena, Guy, Geoffrey, and Buffy.

6. Geoffrey's family travelled exactly three times as far as Buffy's.

Timed Exercise Answers

$5 \times 6 = 30$ $5 \times 2 = 10$ $8 \times 3 = 24$ $7 \times 5 = 35$ $2 \times 4 = 8$ $4 \times 7 = 28$

$9 \times 0 = 0$ $1 \times 5 = 5$ $5 \times 5 = 25$ $4 \times 6 = 24$ $8 \times 6 = 48$ $3 \times 7 = 21$ $1 \times 1 = 1$

$$\begin{array}{r} 9 \\ \times\,2 \\ \hline 18 \end{array} \qquad \begin{array}{r} 3 \\ \times\,3 \\ \hline 9 \end{array} \qquad \begin{array}{r} 5 \\ \times\,4 \\ \hline 20 \end{array} \qquad \begin{array}{r} 1 \\ \times\,8 \\ \hline 8 \end{array} \qquad \begin{array}{r} 4 \\ \times\,8 \\ \hline 32 \end{array} \qquad \begin{array}{r} 9 \\ \times\,3 \\ \hline 27 \end{array}$$

$$\begin{array}{r} 3 \\ \times\,7 \\ \hline 21 \end{array} \qquad \begin{array}{r} 5 \\ \times\,3 \\ \hline 15 \end{array} \qquad \begin{array}{r} 5 \\ \times\,8 \\ \hline 40 \end{array} \qquad \begin{array}{r} 7 \\ \times\,2 \\ \hline 14 \end{array} \qquad \begin{array}{r} 6 \\ \times\,3 \\ \hline 18 \end{array} \qquad \begin{array}{r} 2 \\ \times\,8 \\ \hline 16 \end{array}$$

DAY 9

There are no self-marking activities for Day 9.

DAY 10: LESSON 1

1. Your tally chart should look like this.

Student's Name	Tally	Total
Luke	////	4
Randi	//	2
Juan	//// //// /	11
Marek	////	5
Dana	//// /	6
Rena	///	3
Enzo	//// ////	9
Sean	//// //	7
Macey	////	5
Lydia	//// //// ///	13
Grace	////	5
Natalie	//// ////	10
Freddie	/	1
David	//// ///	8

2. a. Based on the number of books read in one month, Juan, Enzo, Lydia, Natalie, and David will read the most books during the summer holidays.

   b. They read the most books in one month so they will likely continue the pattern in the summer.

3. a. Marek, Macey, and Grace each read the same number of books.

   b. They each read five books.

4. a. Lydia read the most books.

   b. Freddie read the least books.

5. Juan read 11 books. Sean read 7 books. Sean would have to read four more books.
   11 − 7 = 4

6. a. You would add each student's monthly total twelve times or multiply the total by twelve (the number of months in a year). You could add or multiply with pencil and paper or use a calculator.

   b. The number of books each student would read in a year would be as follows:

Luke: 48	Randi: 24	Juan: 132	Marek: 60
Dana: 72	Rena: 36	Enzo: 108	Sean: 84
Macey: 60	Lydia: 156	Grace: 60	Natalie: 120
Freddie: 12	David: 96		

7. Your questions may be different. These are some examples:

• How many books were read altogether?

• How many books did _____ read?

• How many more books did _____ read than _____ ?

• How many books did _____ and _____ read altogether?

DAY 10: LESSON 2

1. In all, how many kilograms of dog food do these dogs eat?

○ 11 kg
○ 17 kg
● 20 kg
○ 22 kg

2. How many more kilograms of dog food does the labrador eat than the poodle?

○ $\frac{1}{2}$ kg
● 1 kg
○ 2 kg
○ 4 kg

3. Which graph shows the correct number of shapes in the box?

a. ○

Number of Shapes

0	1	2	3	4

Triangles Circles Squares Rectangles

b. ○

Number of Shapes

0	1	2	3	4

Triangles Circles Squares Rectangles

c. ●

Number of Shapes

0	1	2	3	4

Triangles Circles Squares Rectangles

d. ○

Number of Shapes

0	1	2	3	4

Triangles Circles Squares Rectangles
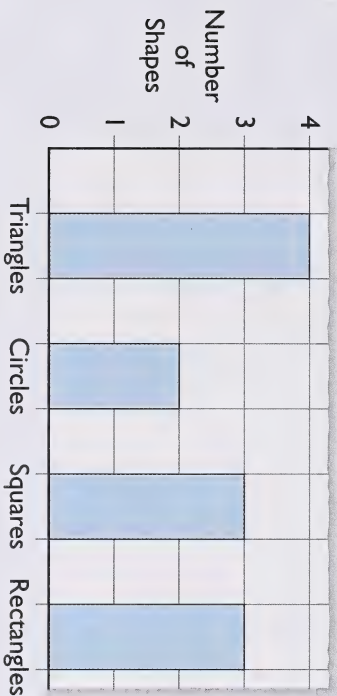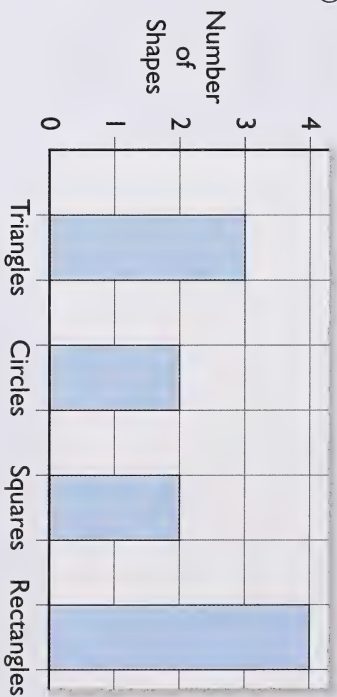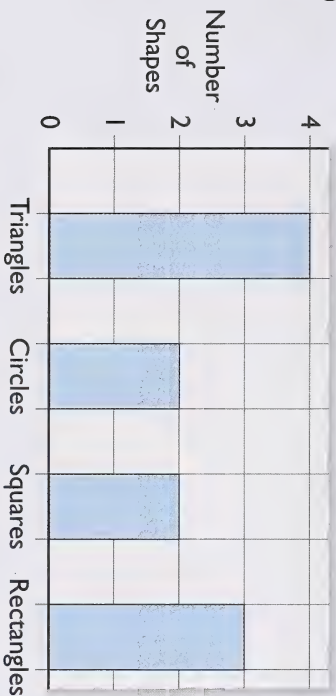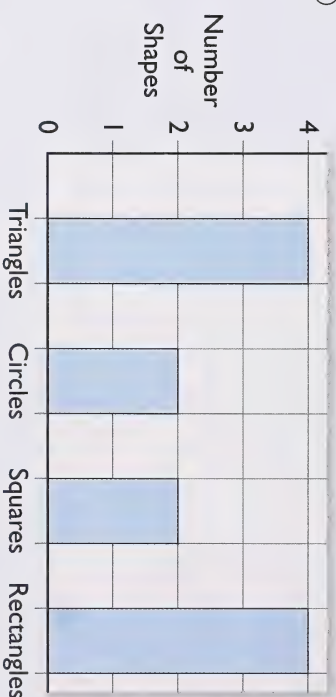
DAY 10: LESSON 3

1. Your tally chart should look like the following. You may have rank ordered the data.

Favourite Ice-Cream Flavours

Ice-Cream Flavours	Tally	Total
Chocolate	////// /	6
Strawberry	///	3
Vanilla	////	4

2. Your pictograph should be similar to the following. You may have a different title, and you may have used a different symbol or picture. You may have rank ordered the data.

Ice-Cream Flavours

Chocolate	
Strawberry	
Vanilla	

🍦 = 1 person

3. From most popular to least popular, the ice-cream flavours are chocolate, vanilla, and strawberry.

DAY 11: LESSON 1 AND LESSON 2

DAY 11: LESSON 1

1. The coin will have landed with either heads or tails.

2. You will have selected any card from the deck. You would not know which card you selected until you looked at it because there are many cards to choose from.

3. One of the numbers from one to six would have turned up.

4. Using things like number cubes, dice, cards, and coin flips is using chance—the result is not known before. People use chance to choose who goes first and to play lots of different games.

DAY 11: LESSON 2

1. You would have a good chance of winning in *Snakes and Ladders* because there are only two players.

2. You would have little chance of winning at a *bingo* game because many people would be playing, and there are lots of numbers.

3. In a *bingo* game you could increase your chances of winning by playing more cards. Your chances of winning would also increase if the number of players was small.

DAY 11: LESSON 3 AND DAY 12: LESSON 1

DAY 11: LESSON 3

1. Your results may be different from your prediction. Did you predict that the number of times of heads and tails would be nearly equal?

2. Your prediction may or may not have been accurate. With each roll of the cube, there are six possibilities. Each time you have one chance in six of getting a 3.

3. Your prediction may or may not have been accurate. There are many possibilities.

4. You cannot accurately predict an outcome based on chance because different outcomes are possible.

DAY 12: LESSON 1

1. Another word for likely is **probably**.

2. Another way of saying "probably not" is **unlikely**.

3. Marta studied hard for the test. Stephanie didn't study at all. Stephanie is **unlikely** to do well on the test.

4. Al plays his cello very well. Chances are that he will **likely** win one of the prizes at the festival.

5. Our hockey team has won most of its games this year and it's **likely** they will make it to the playoffs.

6. Louise has a bad cold and has spent the day in bed. It's **unlikely** she will be able to go to the party tonight.

DAY 12: LESSON 2

1. A dog will fly. **impossible**

2. You will have a birthday this year. **certain**

3. You will wake up with two noses. **impossible**

4. Your favourite sports team will win its next game. **uncertain**

5. Spring will follow winter. **certain**

Timed Exercise Answers

$7 \times 6 = 42$ $3 \times 2 = 6$ $7 \times 5 = 35$ $5 \times 7 = 35$ $2 \times 6 = 12$ $3 \times 7 = 21$ $4 \times 9 = 36$

$1 \times 5 = 5$ $8 \times 5 = 40$ $5 \times 2 = 10$ $7 \times 3 = 21$ $3 \times 3 = 9$ $8 \times 0 = 0$

2 × 2 **4**	7 × 3 **21**	8 × 6 **48**	9 × 0 **0**	1 × 7 **7**	8 × 5 **40**
3 × 8 **24**	7 × 2 **14**	5 × 4 **20**	6 × 6 **36**	4 × 6 **24**	4 × 7 **28**

DAY 13: LESSON 1 AND LESSON 3

DAY 13: LESSON 1

1. unlikely   2. impossible   3. uncertain   4. certain

DAY 13: LESSON 3

1. You should predict that red will come up more often because the red section is bigger. Your answer may be different.

2. Your answer may be different. You may predict that out of 30 spins, 20 will be green and 10 will be red.

3. Your answer to this question may be different. This is an example of one student's answer.

Outcome	Tally	Total
red	₩₩ ₩₩ ₩₩ ////	19
green	₩₩ ₩₩ /	11

Based on the prediction given in question 2, the results are very close.

4. Blue should come up more often on Spinner A. Your answer might be different. Spinner A will land on blue more often because the blue area is larger or covers more of the spinner. In Spinner B, both areas are the same size, so each colour has an equal chance of coming up.

DAY 14: LESSON 1

1. ○ impossible
   ● likely
   ○ less likely
   ○ certain

2. ○ impossible
   ○ likely
   ● less likely
   ○ certain

3. ○ impossible
   ● uncertain
   ○ certain

4. ○ impossible
   ● uncertain
   ○ certain

5. ● impossible
   ○ likely
   ○ less likely
   ○ certain

6. ○ impossible
   ○ likely
   ○ less likely
   ● certain

DAY 14: LESSON 2 AND DAY 15: LESSON 1

DAY 14: LESSON 2

1. Your prediction may have been that the spinner will land on one colour more often than the other or you may have predicted that it will land on each colour the same amount.

2. Your answer may be different. The spinner should land on each colour about an equal number of times because the area covered on the spinner is the same size for both colours.

3. Because each colour covers an equal area, your prediction for each colour should be equal: purple 15, yellow 15.

4. Your actual count may or may not be similar to your prediction.

5. You may or may not have been surprised with the results of your experiment. The spinner had an equal chance of landing on both of the colours, but it doesn't always turn out that way.

DAY 15: LESSON 1

1. There are four sections.

2. There are two colours.

3. The spinner is likely to land about equally on both colours because they each cover the same amount of area or space on the spinner.

4. Your prediction may have been that the spinner will or will not land on each colour about equally.

5. The spinner is as likely to land on either colour because the space each covers on the spinner is equal.

6. Your prediction may have been that the spinner will or will not land on each colour about equally.

7. The spinner is as likely to land on either colour because the space each covers on the spinner is equal.

8. Your spinners may or may not have worked as you predicted. The colours cover the same amount of space or area so the spinner is as likely to land on either colour.

9. The number of sections does not matter if the amount of space covered is equal for both colours.

DAY 15: LESSON 2

1. You may or may not have predicted that the spinner will land on each colour equally.

2. The space covered by each colour is equal so the chances of the spinner landing on each is equal.

3. The spinner may or may not have worked the way you predicted. It is equally likely that the spinner will land on each of the three colours. The total for each colour should be close to equal.

4. You may have predicted that it is unlikely the spinner would land on the colour covering the very small section on the spinner. You may also have said that the spinner would land most often on the colour of the largest section.

5. The spinner should not land on the colour covering the very small space on the spinner very often. If one space is much bigger than the other two, the spinner will often land on that space.

6. The spinner may or may not have worked as you predicted. The chances of landing on the colour covering a very small section of the spinner is unlikely. The chances of landing on the colour covering a large section of the spinner is likely.

Timed Exercise Answers

$3 \times 5 = 15$ $8 \times 5 = 40$ $5 \times 3 = 15$ $4 \times 8 = 32$ $9 \times 4 = 36$ $1 \times 1 = 1$ $8 \times 0 = 0$

$1 \times 9 = 9$ $6 \times 5 = 30$ $6 \times 6 = 36$ $3 \times 8 = 24$ $7 \times 7 = 49$ $5 \times 9 = 45$

$$\begin{array}{r} 1 \\ \times\,2 \\ \hline 2 \end{array} \qquad \begin{array}{r} 9 \\ \times\,3 \\ \hline 27 \end{array} \qquad \begin{array}{r} 3 \\ \times\,6 \\ \hline 18 \end{array} \qquad \begin{array}{r} 2 \\ \times\,8 \\ \hline 16 \end{array} \qquad \begin{array}{r} 4 \\ \times\,6 \\ \hline 24 \end{array} \qquad \begin{array}{r} 7 \\ \times\,3 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 6 \\ \times\,7 \\ \hline 42 \end{array} \qquad \begin{array}{r} 5 \\ \times\,7 \\ \hline 35 \end{array} \qquad \begin{array}{r} 6 \\ \times\,8 \\ \hline 48 \end{array} \qquad \begin{array}{r} 7 \\ \times\,1 \\ \hline 7 \end{array} \qquad \begin{array}{r} 6 \\ \times\,0 \\ \hline 0 \end{array} \qquad \begin{array}{r} 4 \\ \times\,2 \\ \hline 8 \end{array}$$

DAY 16: LESSON 1

Compare where you placed your letters to the following line. You may not have placed your letters exactly the same.

```
d        e            c          a        b
|--------|------------|----------|--------|
Impossible                              Certain
```

1. You may or may not have predicted that the chance of landing on the colour with the largest section on the spinner is more likely and the chance of landing on the colours with the smaller sections is less likely.

2. The spinner will likely land on the largest section most often and on the smaller sections less often because the biggest section covers the largest area. The chance of the spinner landing on the largest area is more likely.

3. Your spinner may or may not have worked as you predicted. The spinner is more likely to land on the colour that covers the largest section of the spinner. It is less likely to land on the colours that cover the smaller sections.

4. Which result do you think is more likely to occur in 40 spins? Fill in the circle beside the best answer.
   ○ 10 moons, 10 stars, 20 suns
   ● 10 suns, 20 stars, 10 moons

5. The pointer is most likely to land on stars.

6. The pointer is less likely to land on moons or suns.

7. The spinner may or may not have worked the way you predicted. The spinner is less likely to land on the moons and suns sections because each covers a smaller section of the spinner than the stars do.

DAY 16: LESSON 3

DAY 16: LESSON 3

1. You should have drawn a spinner that has no red in it. It can have as many sections and other colours as you like.

2. Your spinner should be all red.

3. The green section, or sections, on your spinner should cover the largest area.

4. The green section, or sections, on your spinners should cover a much smaller area than the other colours.

Extension Activities

Compare the spinners you make with these comments:

- **The spinner is more likely to stop on purple than pink.**
  Your spinner may have two or more sections. The purple section or sections will be much larger than other coloured sections. The pink section or sections will be smaller than the purple section(s).

- **The spinner will probably stop on all four colours the same number of times.**
  Your spinner will have four equal sections with each section a different colour. You could also have a multiple of four equal sections (8, 16, . . .) with four colours using an equal number of sections.

- **The spinner will stop on yellow as often as it stops on green.**
  Your spinner will have yellow and green cover an equal number of equal-sized sections.

DAY 16: LESSON 3 AND DAY 17: LESSON 1 AND LESSON 2

- **The spinner will stop on blue more often than red.**
  Your spinner may have two or more sections. The blue section or sections will be much larger than other coloured sections. The red section or sections will be smaller than the blue section(s).

- **The spinner has four colours.**
  Your spinner will have four or more sections, but only four colours.

- **The spinner has five colours.**
  Your spinner will have five or more sections, but only five colours.

DAY 17: LESSON 1

1. There are two possible outcomes when flipping a coin.

2. The possible outcomes are heads or tails.

3. The chance of flipping heads is the same as the chance of flipping tails. The chances of either outcome is equally likely.

4. Yes, the outcomes are equally likely.

DAY 17: LESSON 2

1. You may or may not have made accurate predictions about the outcomes of each trial.

2. a. You may have found it easy or difficult to make the predictions.

DAY 17: LESSON 2 AND DAY 18

b. You may have had to actually do the experiments to see the possible outcomes. Your reason may be different.

3. You can conclude that for the coin flip and the spinner, there are two equal possibilities. The results are equally likely. For the number-cube toss there are six different possibilities, so it is not likely the results will be equal.

Extension Activities

1. The highest possible odd sum on one roll of two cubes is 11.
   5 + 6 = 11

2. The highest possible even sum on one roll of two cubes is 12.
   6 + 6 = 12

3. Playing the game twice, with the players exchanging turns, makes it fair for both players. It could take the even player less turns to reach the target sum of 30.

DAY 18

There are no self-marking activities today.

MULTIPLICATION FACTS GRAPH

Number Correct

	Day 3		Day 6		Day 8		Day 12		Day 15	
25										
20										
15										
10										
5										

Day 3   Day 6   Day 8   Day 12   Day 15
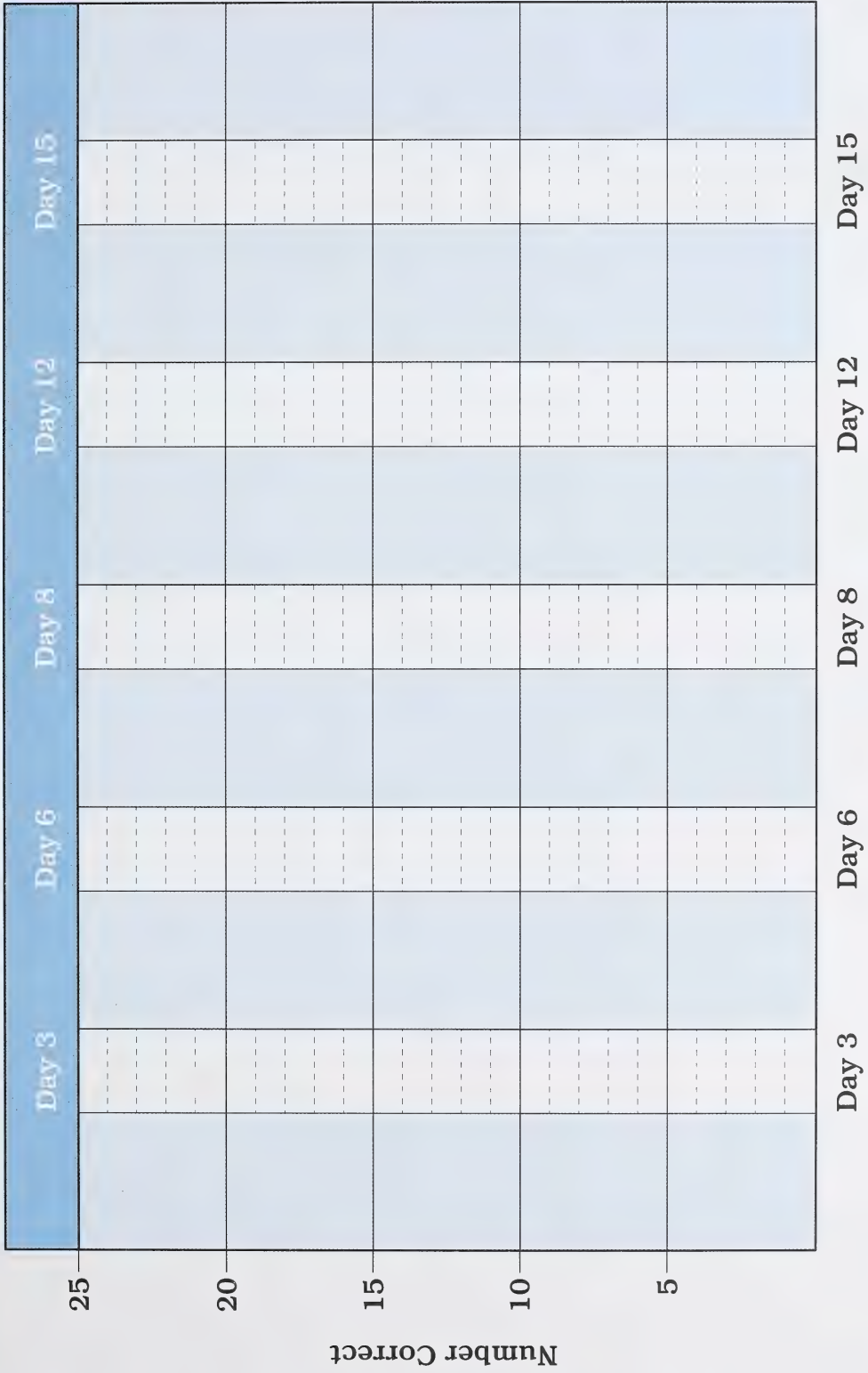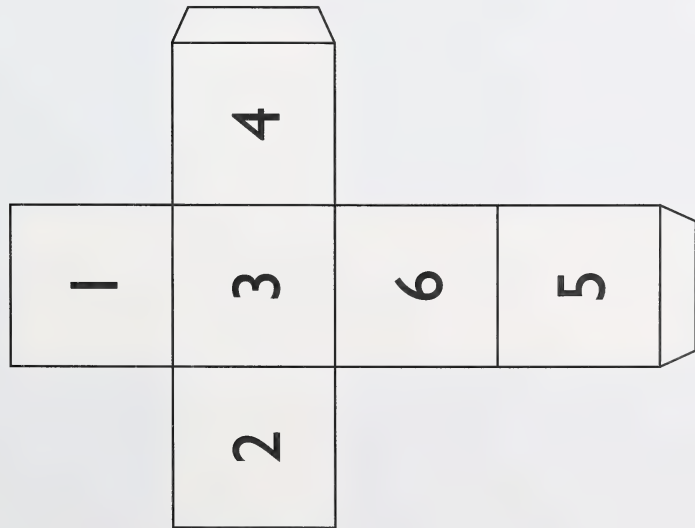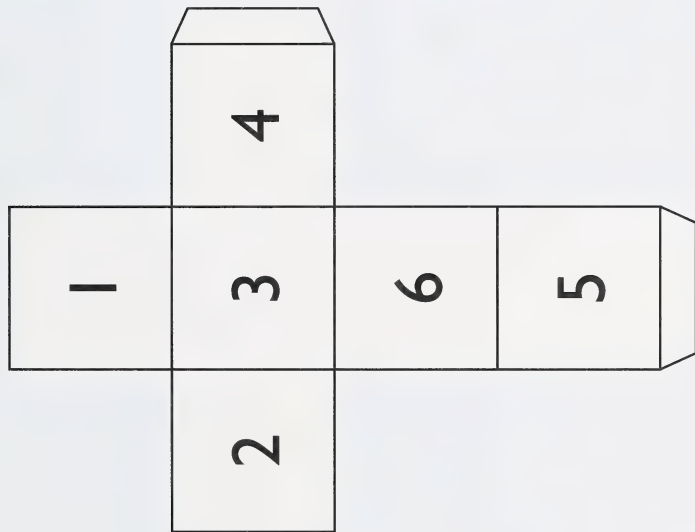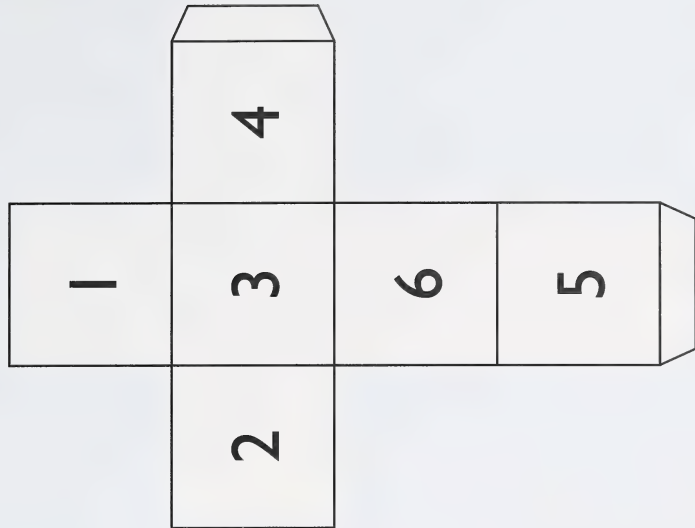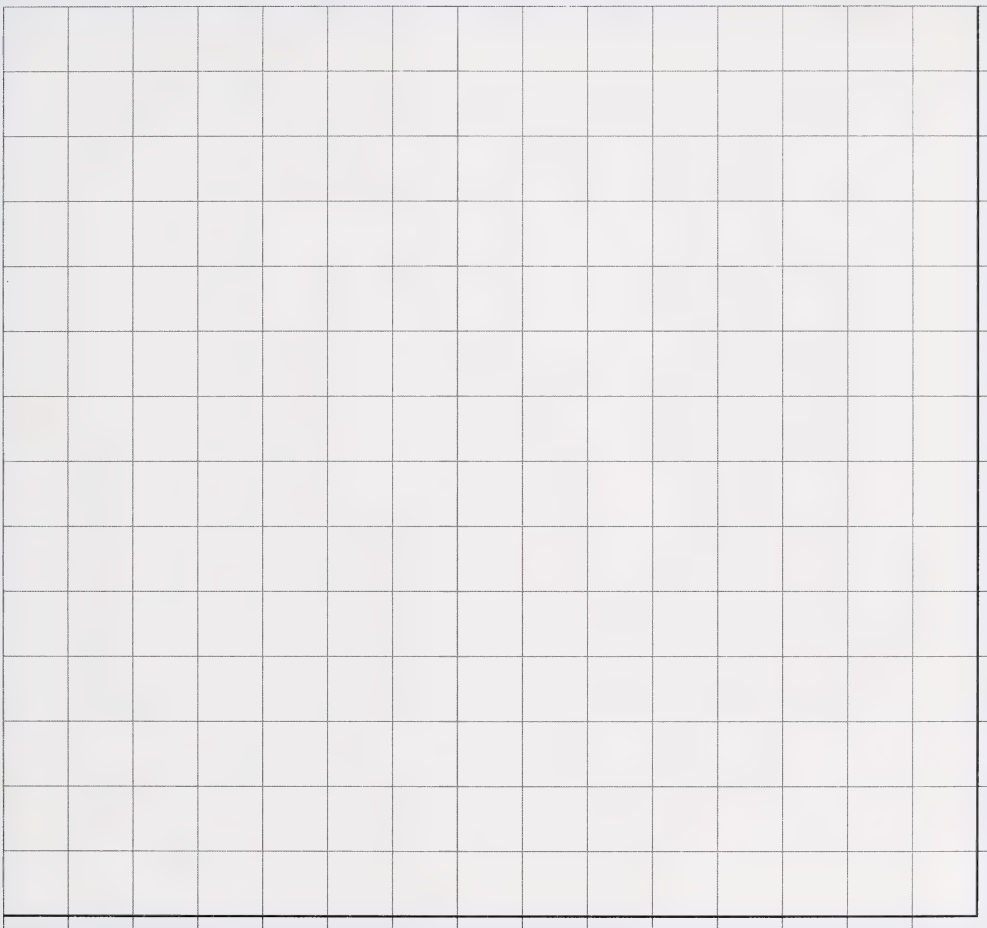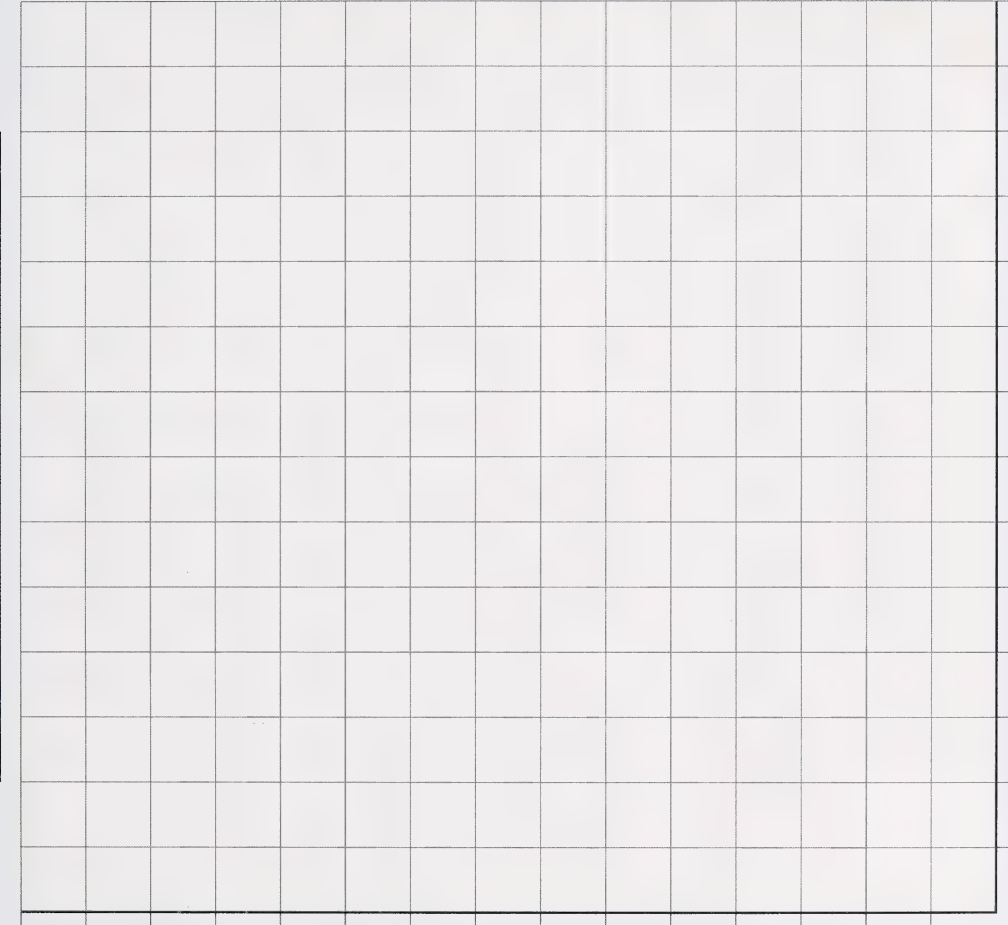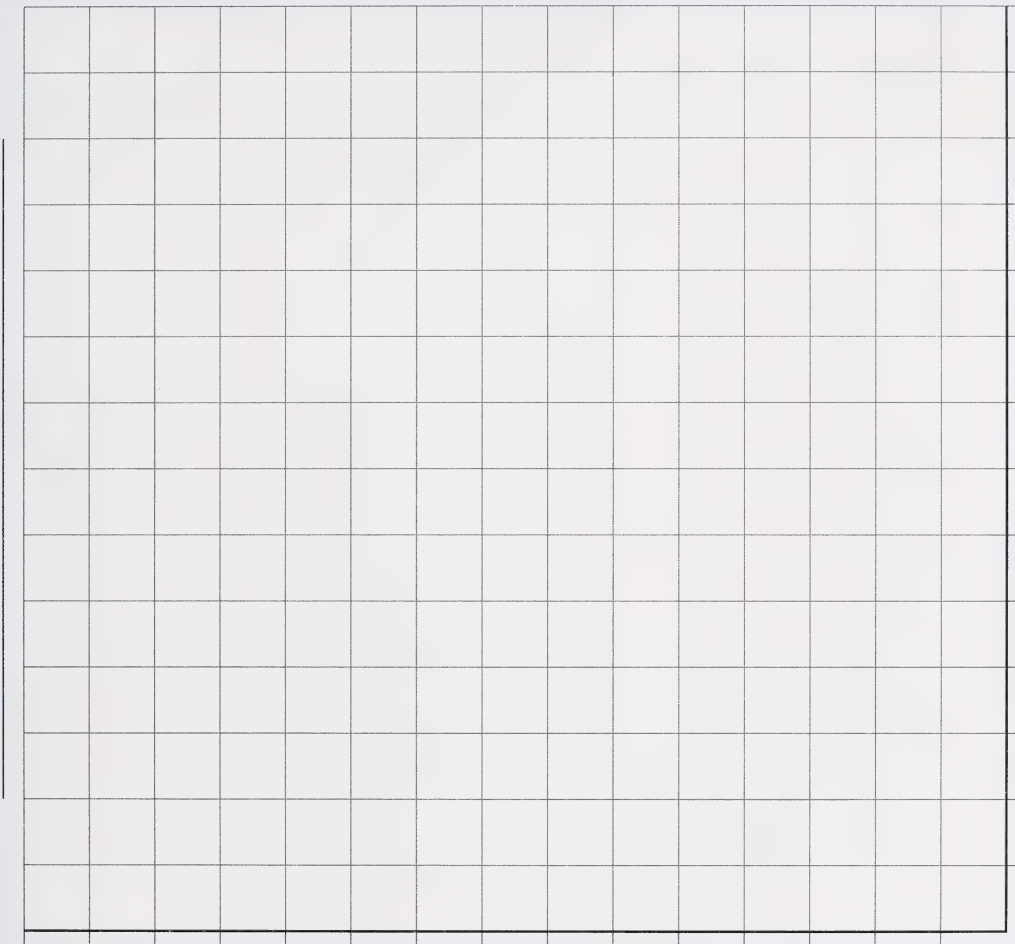
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IMAGE CREDITS